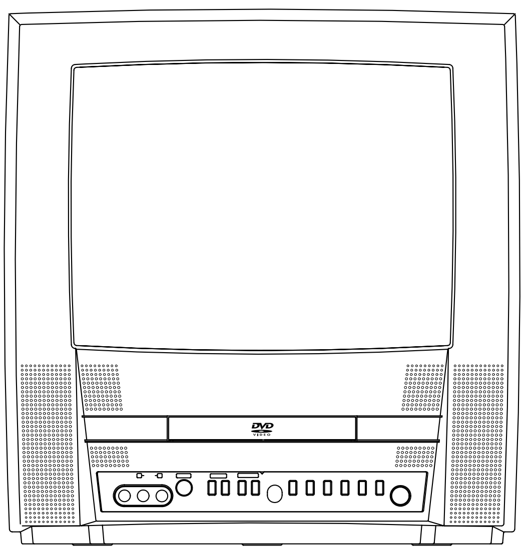
SYLVANIA Emerson®

MAGNAVOX

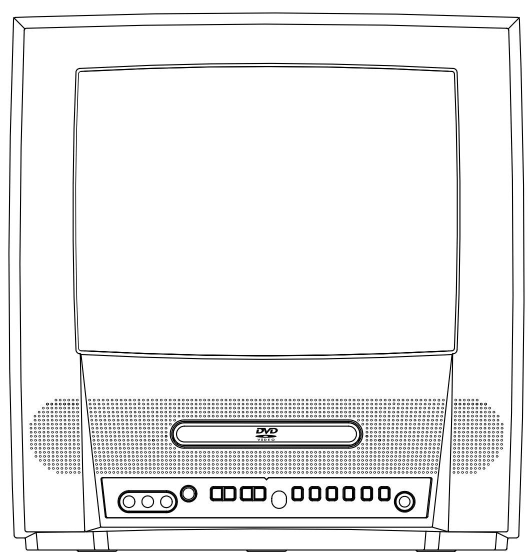
SERVICE MANUAL

13" COLOR TV/DVD

6513DE



EWC13D4
MSD513E



IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

TABLE OF CONTENTS

SPECIFICATIONS

< TV Section >

※Test input terminal
<Except Tuner>-------------Video input (1Vp-p)
Audio input (-10dB)
<Tuner>-----------------------Ant. input (80dBμV) Video: 87.5%
Audio: 25kHz dev (1kHz Sin)

<DEFLECTION>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	—	%	90	—
2. Linearity	Horizontal	%	—	15
	Vertical	%	—	10
3. High Voltage	—	kV	22	—

<VIDEO & CHROMA>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center	m/m	—	0.4
	Corner	m/m	—	2.1
	Side	m/m	—	1.5
2. Tint Control Range	—	deg	±30	—
3. Contrast Control Range	—	dB	12	2
4. Brightness (100% White Full Field)	Contrast: Max	ft-L	55	40
5. Color Temperature	—	K	9200	—

<TUNER>

Description	Condition	Unit	Nominal	Limit
1. Video S/N (80dBμV, TV4ch)	—	dB	45	40
2. Audio S/N (W/LPF)	—	dB	45	40
3. Audio Output Power at Speaker	—	W	1	0.8

Note: Nominal specifications represent the design specifications. All units should be able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specifications.

<DVD Section>

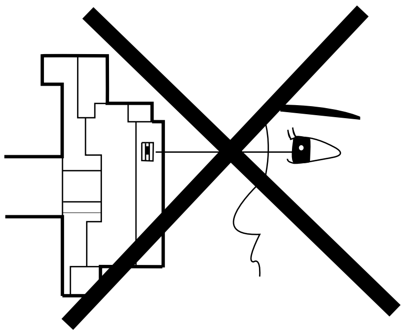
ITEM	CONDITIONS	UNIT	NOMINAL	LIMIT
Coaxial Digital Out	75 ohm load	mVpp	500	± 100

NOTES:

1. All Items are measured without pre-emphasis unless otherwise specified.
2. Power supply : AC120 V 60 Hz
3. Load imp. : 100 k ohm
4. Ambient temperature: +25 °C

LASER BEAM SAFETY PRECAUTIONS

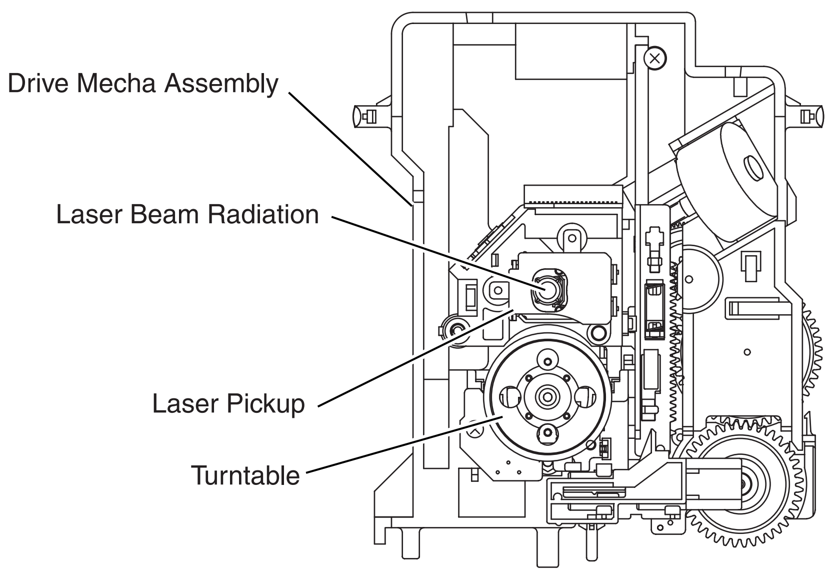
This DVD player uses a pickup that emits a laser beam.



Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

Caution: Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.



CAUTION
LASER RADIATION
WHEN OPEN. DO NOT
STARE INTO BEAM.

Location: Top of DVD mechanism.

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Safety Precautions for TV Circuit

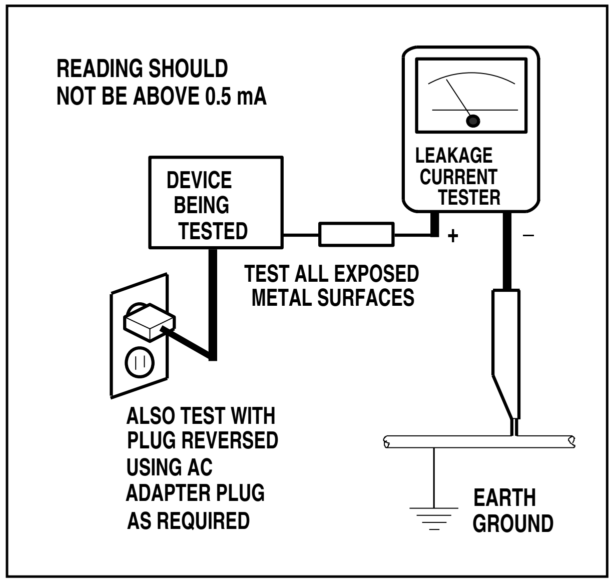
1. **Before returning an instrument to the customer,** always make a safety check of the entire instrument, including, but not limited to, the following items:

a. Be sure that no built-in protective devices are defective and have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the picture tube and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

c. Antenna Cold Check - With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.

d. Leakage Current Hot Check - With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milli-ampere. Reverse the instrument power cord plug in the outlet and repeat the test.



ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

e. X-Radiation and High Voltage Limits - Because the picture tube is the primary potential source of X-radiation in solid-state TV receivers, it is specially constructed to prohibit X-radiation emissions. For continued X-radiation protection, the replacement picture tube must be the same type as the original. Also, because the picture tube shields and mounting hardware perform an X-radiation protection function, they must be correctly in place. High voltage must be measured each time servic-

ing is performed that involves B+, horizontal deflection or high voltage. Correct operation of the X-radiation protection circuits also must be reconfirmed each time they are serviced. (X-radiation protection circuits also may be called "horizontal disable" or "hold down.") Read and apply the high voltage limits and, if the chassis is so equipped, the X-radiation protection circuit specifications given on instrument labels and in the Product Safety & X-Radiation Warning note on the service data chassis schematic. High voltage is maintained within specified limits by close tolerance safety-related components/adjustments in the high-voltage circuit. If high voltage exceeds specified limits, check each component specified on the chassis schematic and take corrective action.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.

3. Design Alteration Warning - Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions will void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4. Picture Tube Implosion Protection Warning - The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; because of potential hazard, do not try to remove such "permanently attached" yokes from the picture tube.

5. Hot Chassis Warning -

a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and may be safety-serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter, measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground.

b. Some TV receiver chassis normally have 85V AC(RMS) between chassis and earth ground regardless of the AC plug polarity. This chassis can be safety-serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection.

c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulation material that must not be defeated or altered.

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts be sure that leads and components do not touch thermally hot parts, c. the AC supply, d. high voltage, and e. antenna wiring. Always inspect in all areas for pinched, out of place, or frayed wiring. Check AC power cord for damage.

7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

8. Product Safety Notice - Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc.. Parts that have special safety characteristics are identified by a (⚠) on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are strictly inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the (⚠) symbol are critical for safety.

Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.

Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation Tape
2) PVC tubing
3) Spacers
4) Insulators for transistors.

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

G. Check that replaced wires do not contact sharp edged or pointed parts.

H. When a power cord has been replaced, check that 5~6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector

When replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, in order to prevent shock hazards, perform carefully and precisely the following steps.

Replacement procedure

1) Remove the old connector by cutting the wires at a point close to the connector.

   Important: Do not re-use a connector (discard it).

2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
4) Use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the TV/DVD connectors, first, disconnect the AC plug from AC supply socket.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

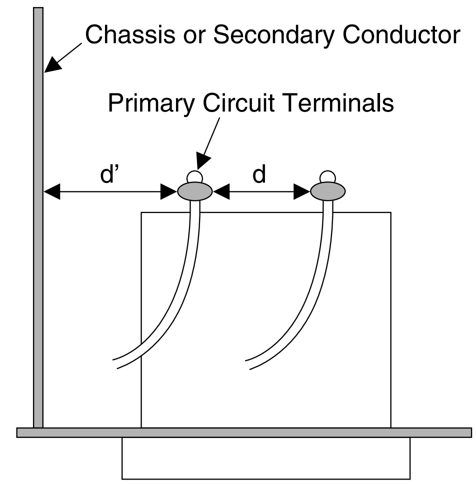


Fig. 1

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1: Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d), (d')
110 to 130 V	USA or CANADA	≥ 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig. 2 and following table.

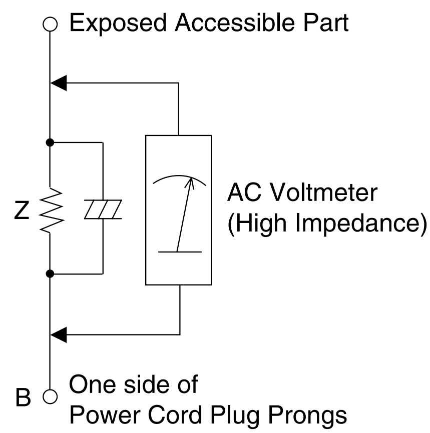


Fig. 2

Table 2: Leakage current ratings for selected areas

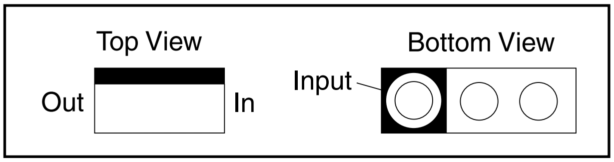
AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	USA or CANADA	0.15µF CAP. & 1.5kΩ RES. connected in parallel	i≤0.5mA rms	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

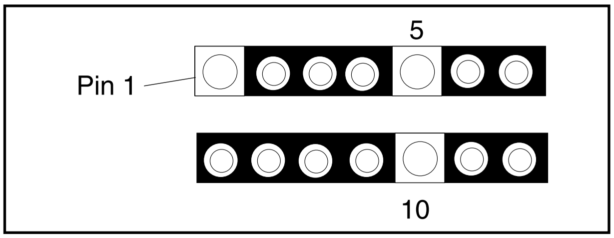
STANDARD NOTES FOR SERVICING

Circuit Board Indications

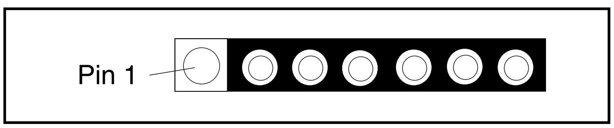
1. The output pin of the 3 pin Regulator ICs is indicated as shown:



2. For other ICs, pin 1 and every 5th pin is indicated as shown:

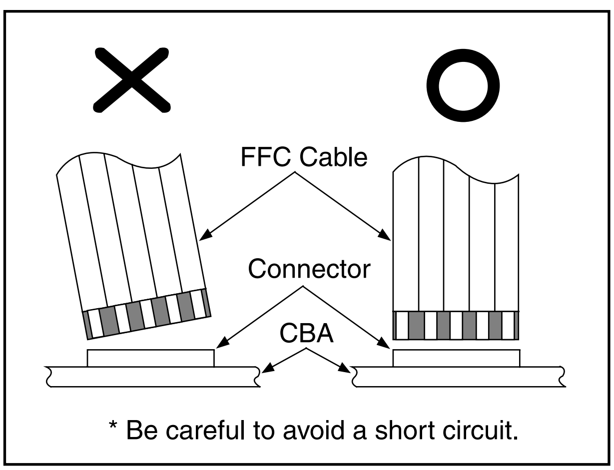


3. The 1st pin of every pin connector are indicated as shown:



Instructions for Connectors

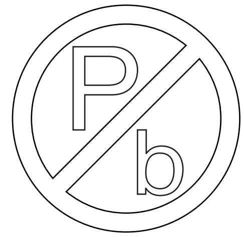
1. When you connect or disconnect FFC cable (connector), be sure to disconnect the AC cord.
2. FFC cable (connector) should be inserted parallel into the connector, not at an angle.



[CBA= Circuit Board Assembly]

Pb (Lead) Free Solder

Pb free mark will be found on PCBs used Pb free solder. (Refer to figure.) For PCBs with Pb free mark, be sure to use Pb free solder. For PCBs without Pb free mark, use standard solder.



Pb free mark

How to Remove / Install Flat Pack IC

Caution:

1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not apply the hot air to the chip parts around the Flat Pack-IC for over 6 seconds as damage may occur to the chip parts. Put Masking Tape around the Flat Pack-IC to protect other parts from damage. (Fig. S-1-2)
3. The Flat Pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or solder lands under the IC when removing it.

1. Removal

With Hot - Air Flat Pack - IC Desoldering Machine:

a. Prepare the Hot - Air Flat Pack - IC Desoldering Machine, then apply hot air to Flat Pack - IC (about 5~6 seconds). (Fig. S-1-1)

b. Remove the Flat Pack- IC with tweezers while applying the hot air.

With Soldering Iron:

a. Using desoldering braid, remove the solder from all pins of the Flat Pack - IC. When you use solder flux which is applied to all pins of the Flat Pack - IC, you can remove it easily. (Fig. S-1-3)

b. Lift each lead of the Flat Pack - IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air Desoldering Machine. (Fig. S-1-4)

With Iron Wire:

a. Using desoldering braid, remove the solder from all pins of the Flat Pack - IC. When you use solder flux which is applied to all pins of the Flat Pack - IC, you can remove it easily. (Fig. S-1-3)

b. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

c. Pull up on the wire as the solder melts so as to lift the IC leads from the CBA contact pads, while heating the pins using a fine tip soldering iron or hot air blower.

Note:

When using a soldering iron, care must be taken to ensure that the Flat Pack - IC is not being held by glue, or when it is removed from the CBA, it may be damaged if force is used.

2. Installation

a. Using desoldering braid, remove the solder from the foil of each pin of the Flat Pack - IC on the CBA, so you can install a replacement Flat Pack - IC more easily.

b. The "●" mark on the Flat Pack - IC indicates pin 1 (See Fig. S-1-6). Make sure this mark matches the 1 on the CBA when positioning for installation. Then pre - solder the four corners of the Flat Pack-IC (See Fig. S-1-7).

c. Solder all pins of the Flat Pack - IC. Make sure that none of the pins have solder bridges.

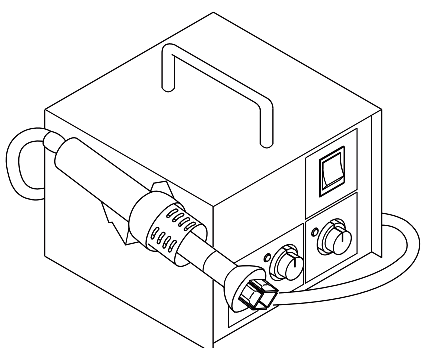


Fig. S-1-1

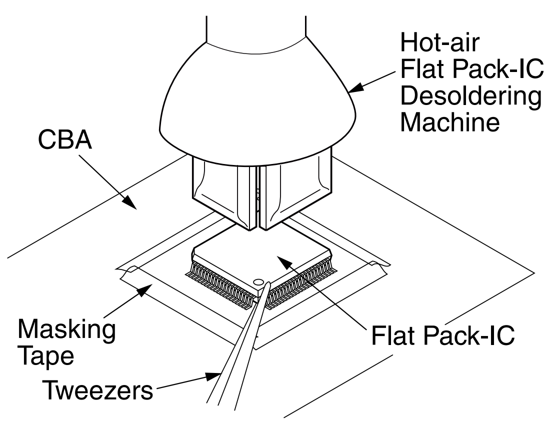


Fig. S-1-2

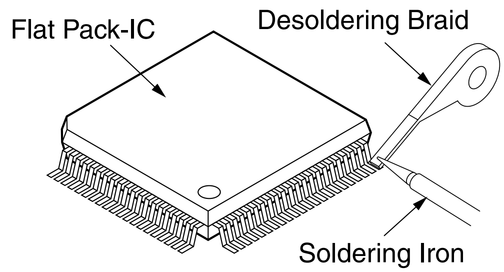


Fig. S-1-3

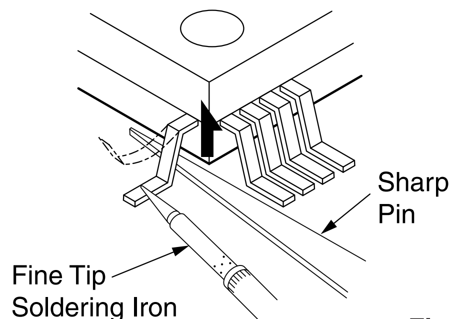


Fig. S-1-4

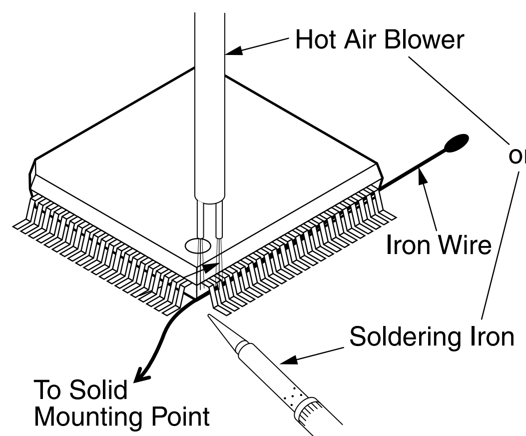
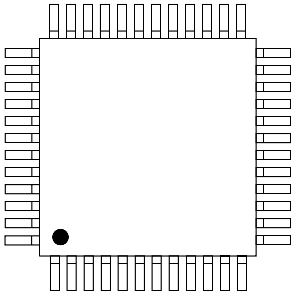


Fig. S-1-5

Example :



Pin 1 of the Flat Pack-IC
is indicated by a " ● " mark.

Fig. S-1-6

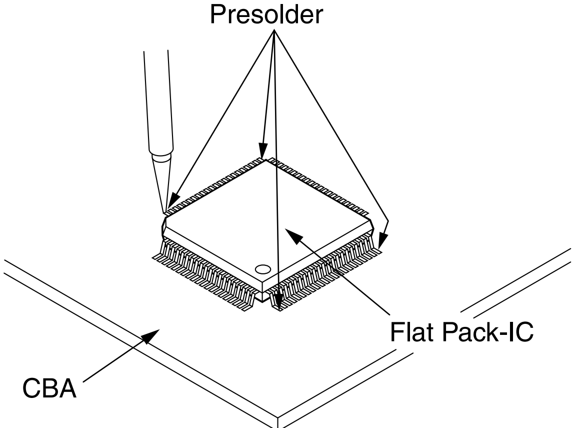


Fig. S-1-7

Instructions for Handling Semiconductors

Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

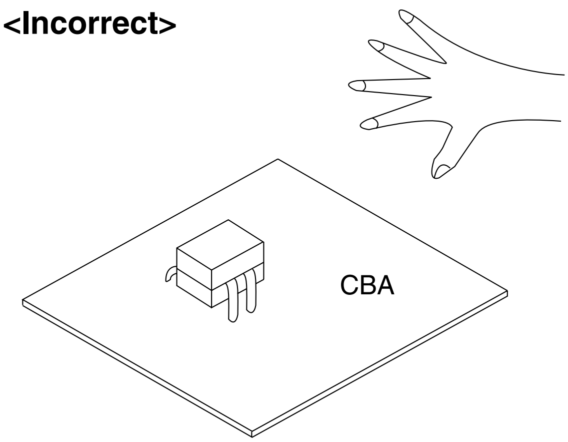
Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

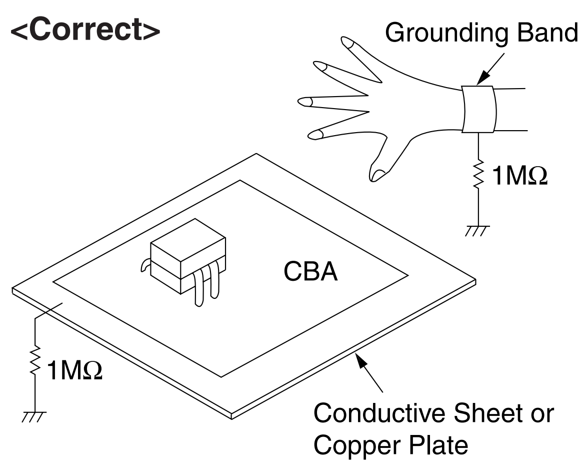
Ground for Work Bench

Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the work bench or other surface, where the semiconductors are to be placed. Because the static electricity charge on the clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors to clothing.

<Incorrect>



<Correct>



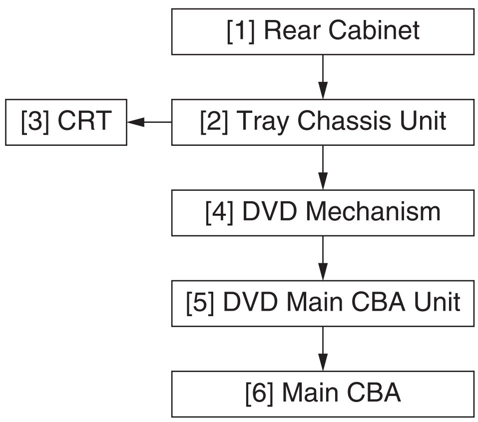
CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps for the cabinet parts, and the CBA in order to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route and dress the cables as they were.

Caution !

When removing the CRT, be sure to discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Rear Cabinet	1	4(S-1), 2(S-2)	-
[2]	Tray Chassis Unit	2,3, 5	Anode Cap, CN1801, CN1802, CN505, CRT CBA, CN1601, CN1571	1
[3]	CRT	2	4(S-3)	-
[4]	DVD Mechanism	3,4, 5	4(S-4), 2(S-5), Loader Cover, CN201, CN301	2-1 2-2 2-3 2-4 3
[5]	DVD Main CBA Unit	3,5	2(S-6), Shield Box, CL001, CL002	-
[6]	Main CBA	3	5(S-7), (S-8)	-

↓ (1) ↓ (2) ↓ (3) ↓ (4) ↓ (5)

(1): Order of steps in Procedure. When reassembling, follow the steps in reverse order.These numbers are also used as the identification (location) No. of parts in Figures.

(2): Parts to be removed or installed.

(3): Fig. No. showing Procedure of Part Location.

(4): Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
S=Screw, P=Spring, L=Locking Tab, CN=Connector, *=Unhook, Unlock, Release, Unplug, or Desolder
2(S-2) = two Screw (S-2)

(5): Refer to the following "Reference Notes in the Table."

Reference Notes in the Table

Caution !

When removing the CRT, be sure to discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.

CAUTION 1: Discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.

1. Disconnect the following: Anode Cap, CN1801, CN1802, CN505, CRT CBA, CN1601, and CN1571.
   Then remove Tray Chassis Unit.

CAUTION 2: Electrostatic breakdown of the laser diode in the optical system block may occur as a potential difference caused by electrostatic charge accumulated on cloth, human body etc., during unpacking or repair work.

To avoid damage of pickup follow next procedures.

2-1. Disconnect Connector (CN301) on the DVD Main CBA Unit.

2-2. Remove four Screws (S-4) and lift the DVD Mechanism up. (Fig. 3)

2-3. Short the three short lands of FPC cable with solder before removing the FFC cable (CN201) from it. If you disconnect the FFC cable (CN201), the laser diode of pickup will be destroyed. (Fig. 4)

2-4. Remove two Screws (S-5) and Loader Cover.

CAUTION 3: When reassembling, confirm the FFC cable (CN201) is connected completely. Then remove the solder from the three short lands of FPC cable. (Fig. 4)

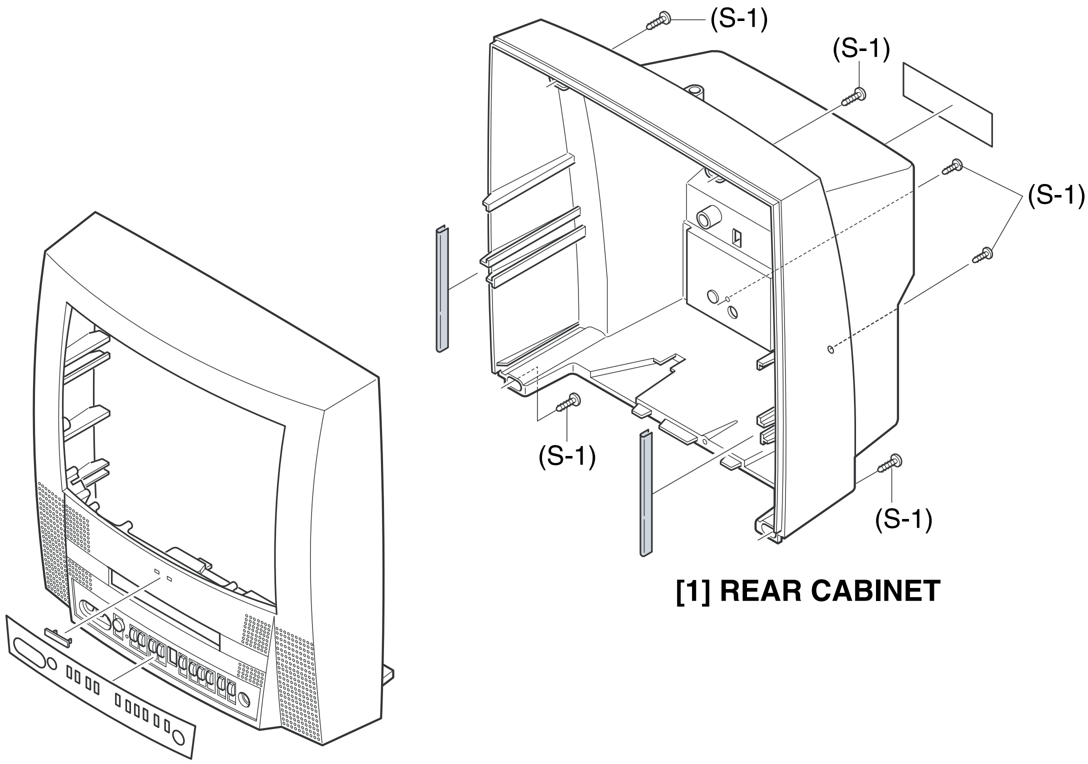


Fig. 1

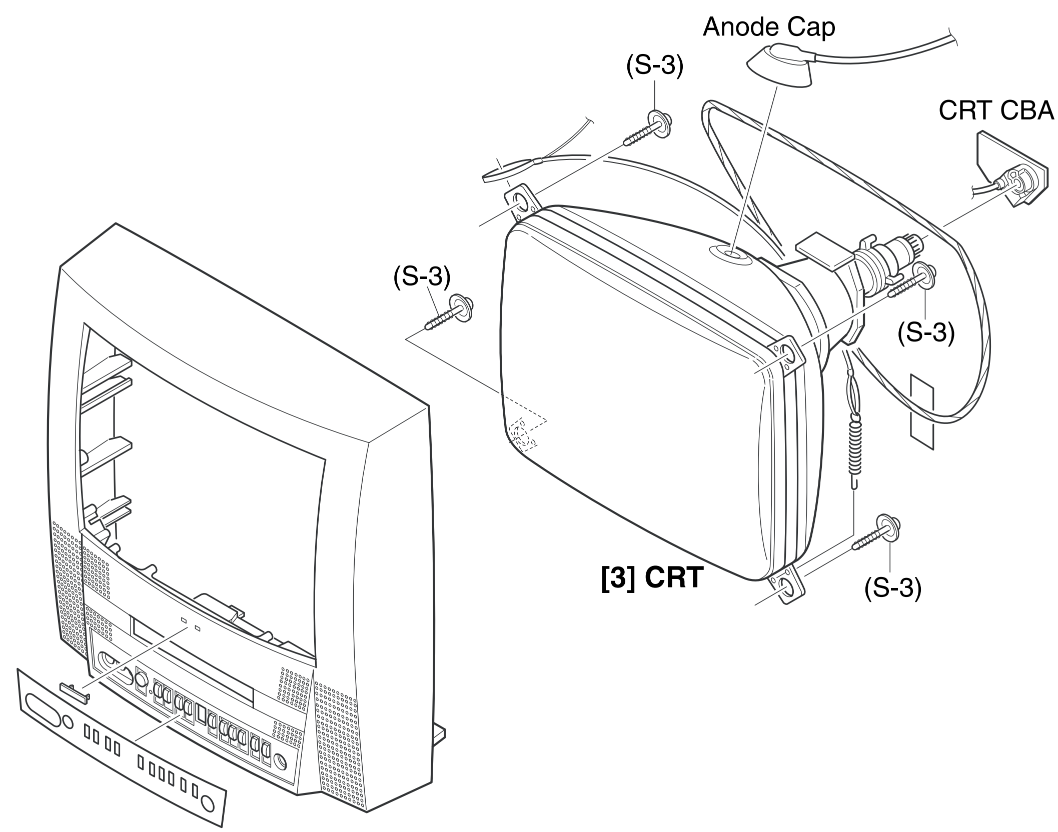


Fig. 2

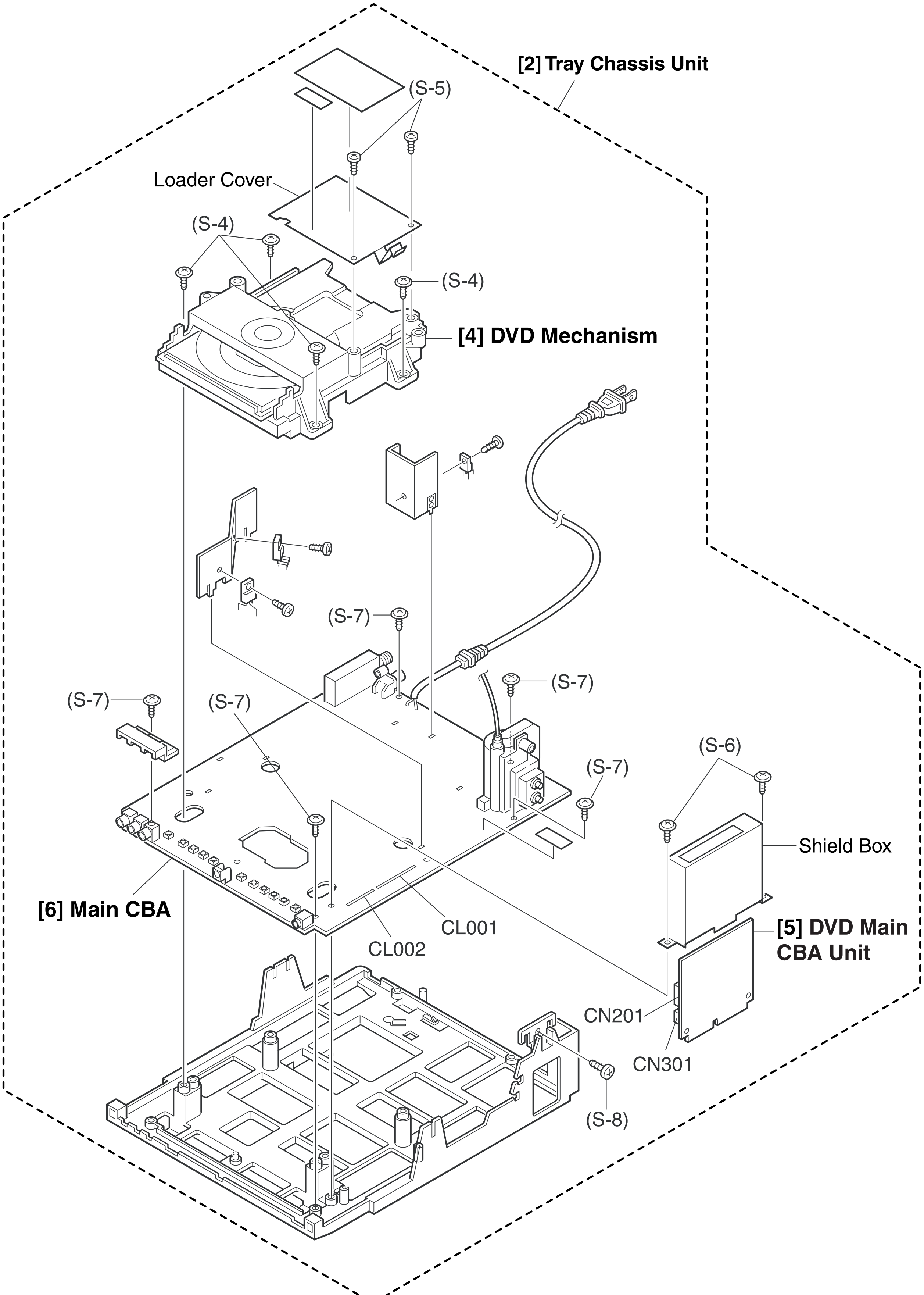

[2] Tray Chassis Unit
(S-5)
Loader Cover
(S-4)
(S-4)
[4] DVD Mechanism
(S-7)
(S-7)
(S-7)
(S-7)
(S-7)
(S-6)
Shield Box
[6] Main CBA
CL001
CL002
[5] DVD Main CBA Unit
CN201
CN301
(S-8)

Fig. 3

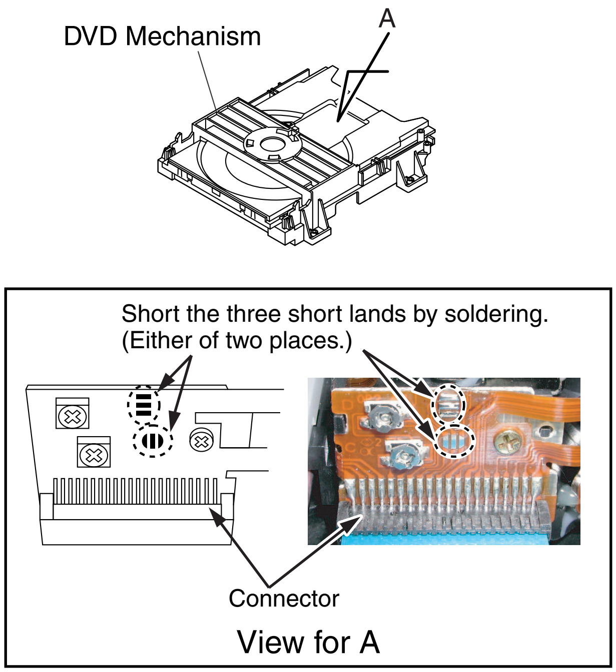

DVD Mechanism
A
Short the three short lands by soldering.
(Either of two places.)
Connector
View for A

Fig. 4

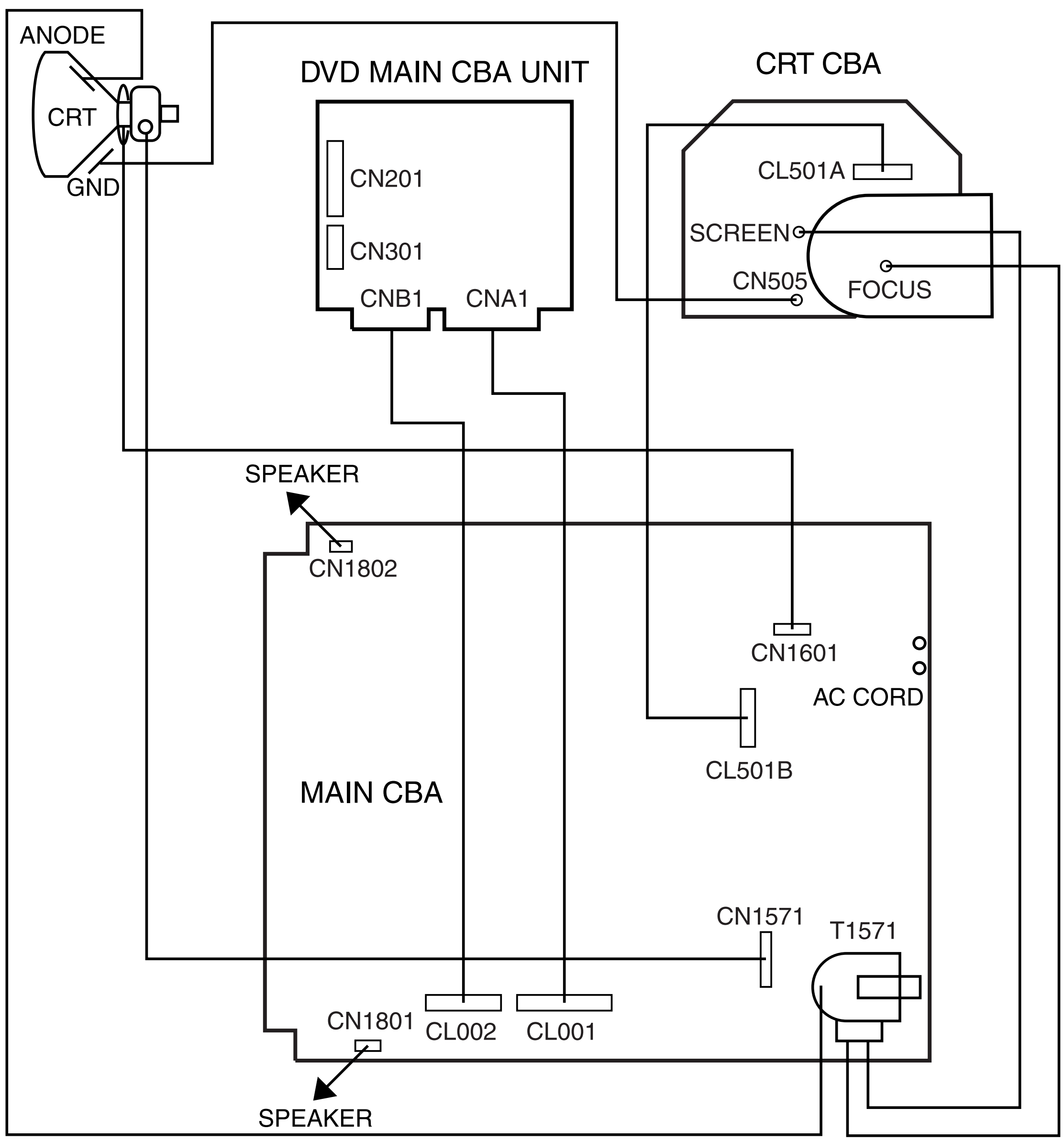

ANODE
CRT
GND
DVD MAIN CBA UNIT
CN201
CN301
CNB1
CNA1
CRT CBA
CL501A
SCREEN
CN505
FOCUS
SPEAKER
CN1802
CN1601
AC CORD
CL501B
MAIN CBA
CN1571
T1571
CN1801
CL002
CL001
SPEAKER

Fig. 5

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note:

"CBA" is abbreviation for "Circuit Board Assembly."

NOTE:

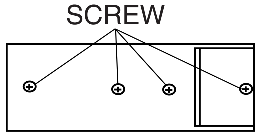
Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed.
Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. NTSC Pattern Generator (Color Bar W/White Window, Red Color, Dot Pattern, Gray Scale, Monoscope, Multi-Burst)
2. AC Milli Voltmeter (RMS)
3. DC Voltmeter
4. Oscilloscope: Dual-trace with 10:1 probe,
   V-Range: 0.001~50V/Div,
   F-Range: DC~AC-60MHz
5. Frequency Counter
6. Plastic Tip Driver
7. Color Analyzer

How to make service remote control unit:

1. Prepare remote control unit.
   (Part No. NE220UD --- **[6513DE]**)
   (Part No. NE221UD --- **[EWC13D4]**)
   (Part No. NE224UD --- **[MSD513E]**)
   Remove 4 screws from the back lid. (Fig. 1-1)



Remote control unit (Bottom)

Fig. 1-1

2. Remote control unit:
   Part No. NE220UD --- **[6513DE]**
   Part No. NE221UD --- **[EWC13D4]**
   Part No. NE224UD --- **[MSD513E]**
   Cut off pin 10 of the remote control microprocessor and short circuit pins 10 and 17 of the microprocessor with a jumper wire.

How to Set up the Service mode:

Service mode:

1. Use the service remote control unit.
2. Turn the power on.
3. Press "DISC MENU" button on the service remote control unit.

1. DC 105V (+B) Adjustment

Purpose: To obtain correct operation.

Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test point	Adj. Point	Mode	Input
J2002 (+B) TP1405 (GND)	VR1601	---	-----
Tape	**M. EQ.**	**Spec.**	
---	DC Voltmeter Plastic Tip Driver	+105±0.5V DC	

Note:
J2002 (+B), TP1405 (GND), VR1601 --- Main CBA

1. Connect the unit to AC Power Outlet.
2. Connect DC Volt Meter to J2002 (+B) and TP1405 (GND).
3. Adjust VR1601 so that the voltage of J2002 (+B) becomes +105±0.5V DC.

2-1. Setting for Data Values

General

1. Enter the Service mode. (See page 1-6-1.)
2. To select the Data Value, press "VOL ▼" button on the service remote control unit.
3. To set the following each data value, press "CH ▲ / ▼" buttons on the service remote control unit.

7F --- set to FF

9V --- set to OFF

2-2. Setting for CONTRAST, COLOR, TINT and V-TINT data Values

General

1. Enter the Service mode. (See page 1-6-1.)
2. Press "PICTURE" button on the service remote control unit. Display changes "BRIGHT," "CONTRAST," "COLOR," "TINT," and "V-TINT"cyclically when "PICTURE" button is pressed.

CONTRAST (CNT)

1. Press "PICTURE" button on the service remote control unit. Then select "CONTRAST" (CNT) display.
2. Press "CH ▲ / ▼" buttons on the service remote control unit so that the value of "CONTRAST" (CNT) becomes 76.

COLOR (CLR)

1. Press "PICTURE" button on the service remote control unit. Then select "COLOR" (CLR) display.
2. Press "CH ▲ / ▼" buttons on the service remote control unit so that the value of "COLOR" (CLR) becomes 58.

TINT (TNT)

1. Press "PICTURE" button on the service remote control unit. Then select "TINT" (TNT) display.
2. Press "CH ▲ / ▼" buttons on the service remote control unit so that the value of "TINT" (TNT) becomes 57.

V-TINT (V-TNT)

1. Press "PICTURE" button on the service remote control unit. Then select "V-TINT" (V-TNT) display.
2. Press "CH ▲ / ▼" buttons on the service remote control unit so that the value of "V-TINT" (V-TNT) becomes 56.

Note: BRIGHT data value does not need to be adjusted at this moment.

3-1. C-Trap Adjustment

Purpose: To get minimum leakage of the color signal carrier.

Symptom of Misadjustment: If C-Trap Adjustment is incorrect, stripes will appear on the screen.

Test point	Adj. Point	Mode	Input
TP1503 (B-OUT)	CH ▲ / ▼ buttons	---	Color Bar
Tape	**M. EQ.**	**Spec.**	
---	Oscilloscope Pattern Generator	---	
Figure			

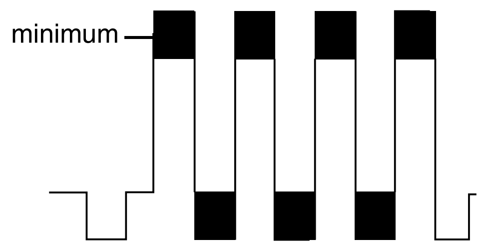


Fig. 2

Note: TP1503 (B-OUT)--- Main CBA

1. Connect oscilloscope to TP1503.
2. Input a color bar signal from RF input. Enter the Service mode. (See page 1-6-1.)
3. Press "0" button on the remote control unit and select C-TRAP mode. (Fig. 3)
4. Press "CH ▲ / ▼" buttons on the remote control unit so that the carrier leakage B-Out (3.58MHz) value becomes minimum on the oscilloscope.
5. Turn the power off and on again.

3-2. Y DL Time TV/Y DL Time EXT/ Y SW LPF/Black Stretch Off/ Black Stretch CONT/C. Angle Adjustment

Purpose: To get minimum leakage of the color signal carrier.

Symptom of Misadjustment: If Y DL Time Adjustment is incorrect, stripes will appear on the screen.

1. Enter the Service mode. (See page 1-6-1.)
2. **Y DL Time TV Adjustment:** Press "0" button on the service remote control unit twice to show "D-T TV" on the display.
   Y DL Time EXT Adjustment: Press "0" button on the service remote control unit three times to show "D-T EXT" on the display.
   Y SW LPF Adjustment: Press "0" button on the service remote control unit four times to show "Y SW" on the display.
   Black Stretch Off Adjustment: Press "0" button on the service remote control unit five times to show "B-S" on the display.
   Black Stretch CONT Adjustment: Press "0" button on the service remote control unit six times to show "BS2" on the display.
   C. Angle Adjustment: Press "0" button on the service remote control unit seven times to show "C-ANG" on the display.
3. **Y DL Time TV Adjustment:** Select "2" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Y DL Time EXT Adjustment: Select "2" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Y SW LPF Adjustment: Select "0" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Black Stretch Off Adjustment: Select "OFF" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Black Stretch CONT Adjustment: Select "0" by pressing "CH ▲ / ▼" buttons on the service remote control.
   C. Angle Adjustment: Select "103" by pressing "CH ▲ / ▼" buttons on the service remote control.

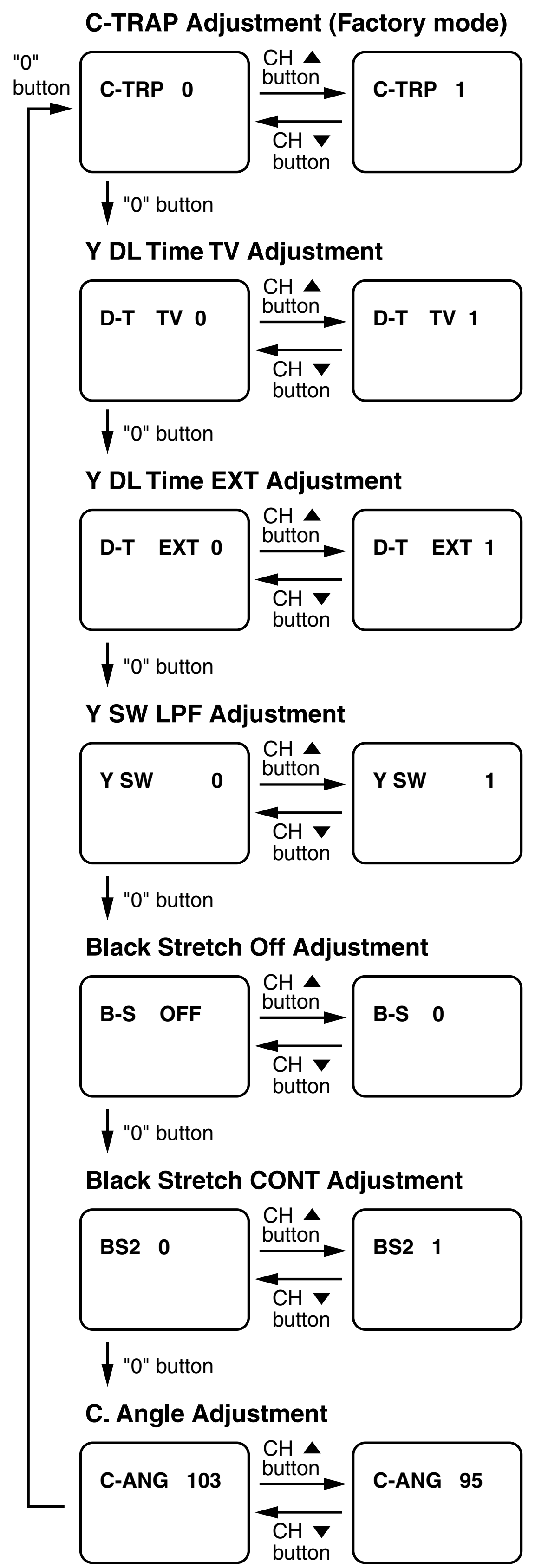


Fig. 3

4. V. Size Adjustment

Purpose: To obtain correct vertical height of screen image.

Symptom of Misadjustment: If V. Size is incorrect, vertical height of image on the screen may not be properly displayed.

Test point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons	---	Monoscope
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	90±5%	

1. Enter the Service mode. (See page 1-6-1.)
   Press "9" button on the remote control unit and select V-S mode. (Press "9" button then display will change to V-P and V-S).
2. Input monoscope pattern.
3. Press "CH ▲ / ▼" buttons on the remote control unit so that the monoscope pattern is 90±5% of display size and the circle is round.

5. V. Position Adjustment

Purpose: To obtain correct vertical width of screen image.

Symptom of misadjustment: If V. Position is incorrect, vertical height of image on the screen may not be properly displayed.

Test point	Adj. Point	Mode	Input
---	Screen Control, CH ▲ / ▼ buttons	RF	Monoscope
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	90±5%	

Note: Use service remote control unit

1. Operate the unit for at least 20 minutes.
2. Enter the Service mode. (See page 1-6-1.)
3. Receive the Monoscope Pattern.
4. Press "9" button on the service remote control unit and select "V-P" mode. (Display change "V-S" and "V-P" cyclically when "9" button is pressed.)
5. Press "CH ▲ / ▼" buttons on the service remote control unit so that the top and bottom of the monoscope pattern will be equal of each other.
6. Turn the power off and on again, using the main power button on the TV unit.

6. H. Position Adjustment

Purpose: To obtain correct horizontal position of screen image.

Symptom of Misadjustment: If H. Position is incorrect, horizontal position of image on the screen may not be properly displayed.

Test Point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons [H-P] mode	RF	Mono-scope
Tape	**M. EQ.**	**Spec.**	
---	Monoscope	90±5%	

Note: Use service remote control unit

1. Operate the unit for at least 20 minutes.
2. Enter the Service mode. (See page 1-6-1.)
3. Receive the Monoscope Pattern.
4. Press "8" button on the remote control unit and select "H-P" mode.
5. Press "CH ▲ / ▼" buttons on the service remote control unit so that the monoscope pattern will be 90±5% of display size and the circle is round.
6. Turn the power off and on again, using the main power button on the TV unit.

7. White Balance Adjustment

Purpose: To mix red, green and blue beams correctly for pure white.

Symptom of Misadjustment: White becomes bluish or reddish.

Test Point	Adj. Point	Mode	Input
Screen	CH ▲ / ▼ buttons	RF	White Raster (APL 100%)
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator, Color analyzer	See below	
Figure			

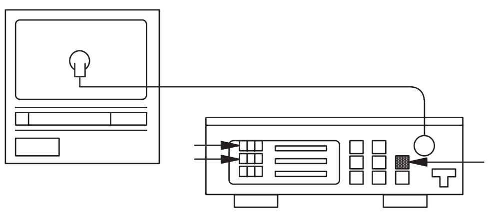


Fig. 4

Note: Use service remote control unit

1. Operate the unit more than 20 minutes.
2. Face the unit to the east. Degauss the CRT using a degaussing coil.
3. Input the White Raster (APL 100%).
4. Set the color analyzer to the CHROMA mode and after zero point calibration, bring the optical receptor to the center on the tube surface (CRT).
5. Enter the Service mode. Press "VOL ▼" button on the service remote control unit and select "C/D" mode. (Display changes "C/D," "7F," and "9V" cyclically when "VOL ▼" button is pressed.) Then press "8" button on the Service remote control Unit.
6. Press "4" button on the service remote control unit for Red adjustment. Press "5" button on the service remote control unit for Blue adjustment.
7. In each color mode, press "CH ▲ / ▼" button to adjust the values of color.
8. Adjusting Red and Blue color so that the temperature becomes 9200K (x: 286 / y: 294) ±3%.
9. At this time, re-check that horizontal line is white. If not, Re-adjust Cut-off Adjustment until the Horizontal Line becomes pure white.
10. Turn off and on again to return to normal mode. Receive APL 100% white signal and confirm that Chroma temperatures become 9200K (x: 286 / y: 294) ±3%.

Note: Confirm that Cut Off Adj. is correct after this adjustment, and attempt Cut Off Adj. if needed.

8. Sub-Brightness Adjustment

Purpose: To get proper brightness.

Symptom of Misadjustment: If Sub-Brightness is incorrect, proper brightness cannot be obtained by adjusting the Brightness Control.

Test Point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons	RF	IQW
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	See below	
Figure			

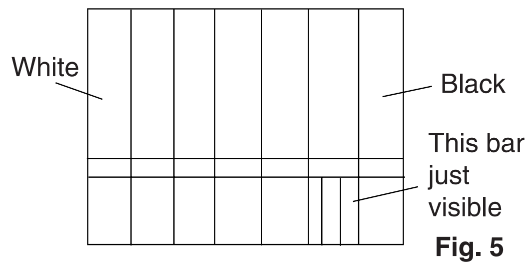


Fig. 5

Note: IQW Setup level --- 7.5 IRE
Use service remote control unit

1. Enter the Service mode. (See page 1-6-1.) Then input IQW signal from RF Input.
2. Press "PICTURE" button on the service remote control unit and Select "BRT" mode. (Display changes "BRT," "CNT," "CLR," "TNT," and "V-TINT" cyclically when PICTURE button is pressed.) Press "CH ▲ / ▼" buttons so that the bar is just visible (See above figure).
3. Turn the power off and on again, using the main power button on the TV unit.

9. Focus Adjustment

Purpose: Set the optimum Focus.

Symptom of Misadjustment: If Focus Adjustment is incorrect, blurred images are shown on the display.

Test Point	Adj. Point	Mode	Input
---	Focus Control	RF	Mono-scope
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	See below	

Note: Focus VR (FBT) --- Main CBA,
FBT= Fly Back Transformer

1. Operate the unit more than 30 minutes
2. Face the unit to the East and degauss the CRT using a degaussing coil.
3. Input the Monoscope Pattern.
4. Adjust the Focus Control on the FBT to obtain a clear picture.

10. H Adjustment

Purpose: To get correct horizontal frequency.

Symptom of Misadjustment: If H adjustment is in correct, skew distortion will appear on the screen.

Test Point	Adj. Point	Mode	Input
R1583	CH ▲ / ▼ button ["H-ADJ"] MODE		---
Tape	**M. EQ.**	**Spec.**	
---	Frequency Counter	15.734kHz±300Hz	

Note: R1583 --- Main CBA
Use Service remote control unit.

1. Connect frequency counter to R583 and ground.
2. Set the unit to the VIDEO mode which is located before CH2 and no input is necessary. Enter the Service mode. (See page 1-6-1.)
3. Operate the unit for at least 20 minutes.
4. Press "2" button on the Service remote control unit and select H-ADJ mode. (By pressing "2" button the display will change from TV AGC to H-ADJ.)
5. Press "CH ▲ / ▼" button on the Service remote control unit so that the display will change "0" ~ "7." At this moment, Choose display one of them from "0" ~ "7" when the frequency counter shows 15.734 kHz±300Hz or closer.
6. Turn the power off and on again. (Main Power button on the TV unit.)

11. Cut-off Adjustment

Purpose: To adjust the beam current of R, G, B, and screen voltage.

Symptom of Misadjustment: White color may be reddish, greenish or bluish.

Test Point	Adj. Point	Mode	Input
---	Screen-Control CH ▲ / ▼ buttons	RF	Black Raster
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	See Reference Notes below.	
Figure			

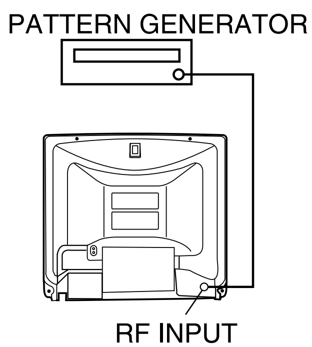


Fig. 6

Note: Screen Control FBT --- Main CBA
FBT= Fly Back Transformer
Use service remote control unit

1. Degauss the CRT and allow CRT to operate for 20 minutes before starting the alignment.
2. Input the Black Raster Signal from RF Input.
3. Enter the Service mode. (See page 1-6-1.)
4. Press "VOL ▼" button on the service remote control unit and select "C/D" mode. (Display changes "C/D," "7F," and "9V" cyclically when "VOL ▼" button is pressed.) then press "1." The display will momentarily show "CUT OFF R" (R= Red.) Now there should be a horizontal line across the center of the picture tube. If needed gradually turn the screen control on the flyback, clockwise until the horizontal line appears. Adjust the Red Cut off by pressing the "CH ▲ / ▼" buttons. Proceed to Step 5 when the Red Cut off adjustment is done.
5. Press the "2" button. The display will momentarily show "CUT OFF G" (G=Green.) Adjust the Green Cut off by pressing the "CH ▲ / ▼" buttons. Proceed to step 6 when the Green Cut off adjustment is done.
6. Press the "3" button. The display will momentarily show "CUT OFF B" (B=Blue.) Adjust the Blue cut off by pressing the "CH ▲ / ▼" buttons. When done with steps 4, 5 and 6 the horizontal line should be pure white if not, then attempt the Cut off adjustment again.

The following 2 adjustments normally are not attempted in the field. They should be done only when replacing the CRT then adjust as a preparation.

12. Purity Adjustment

Purpose: To obtain pure color.

Symptom of Misadjustment: If Color Purity Adjustment is incorrect, large areas of color may not be properly displayed.

Test point	Adj. Point	Mode	Input
---	Deflection Yoke Purity Magnet	---	*Red Color
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	See below.	
Figure			

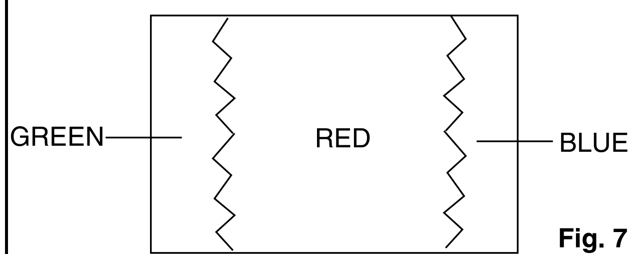


Fig. 7

* This becomes RED COLOR if the 7KEY is pressed while in service mode.

1. Set the unit facing east.
2. Operate the unit for over 30 minutes before adjusting.
3. Fully degauss the unit using an external degaussing coil.
4. Set the unit to the AUX mode which is located before CH2 then input a red raster from video in.
5. Loosen the screw on the Deflection Yoke Clamper and pull the Deflection Yoke back away from the screen. (See Fig. 8.)
6. Loosen the Ring Lock and adjust the Purity Magnets so that a red field is obtained at the center of the screen. Tighten Ring Lock. (See Fig. 7,8.)
7. Slowly push the Deflection Yoke toward the bell of the CRT and set it where a uniform red field is obtained.
8. Tighten the clamp screw on the Deflection Yoke.

13. Convergence Adjustment

Purpose: To obtain proper convergence of red, green and blue beams.

Symptom of Misadjustment: If Convergence Adjustment is incorrect, the edge of white letters may have color edges.

Test point	Adj. Point	Mode	Input
---	C.P. Magnet (RB), C.P. Magnet (RB-G), Deflection Yoke	---	Dot Pattern or Crosshatch

Tape	M. EQ.	Spec.
---	Pattern Generator	See below.

Figure

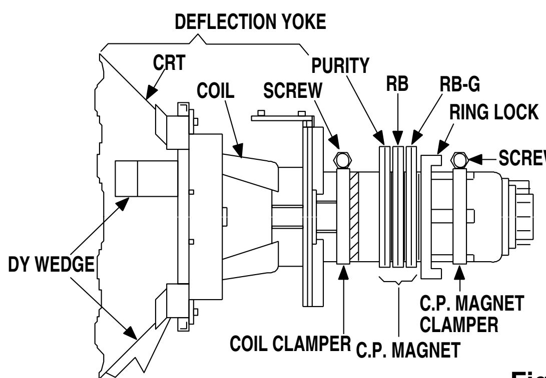


Fig. 8

C.P. MAGNET (RB)

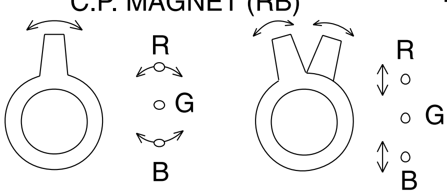


Fig. 9

C.P. MAGNET (RB-G)

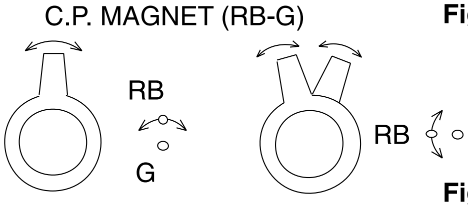


Fig. 10

1. Set the unit to the AUX mode which is located before CH2 then input a dot or crosshatch pattern.
2. Loosen the Ring Lock and align red with blue dots or crosshatch at the center of the screen by rotating (RB) C.P. Magnets. (See Fig. 9.)
3. Align red / blue with green dots at the center of the screen by rotating (RB-G) C.P. Magnet. (See Fig. 10.)
4. Fix the C.P. Magnets by tightening the Ring Lock.
5. Remove the DY Wedges and slightly tilt the Deflection Yoke horizontally and vertically to obtain the best overall convergence.
6. Fix the Deflection Yoke by carefully inserting the DY Wedges between CRT and Deflection Yoke.

FIRMWARE RENEWAL MODE

1. Turn the power on and press [SELECT] button on the remote control unit to put the DVD player into DVD mode. Then remove the disc on the tray.
   (It is possible to move to F/W version up mode only when the DVD player in DVD mode with the tray opened.)
2. To put the DVD player into F/W version up mode, press [9], [8], [7], [6], and [SEARCH MODE] buttons on the remote control unit in that order.
   Fig. a appears on the screen.

"*******" differ depending on the models.

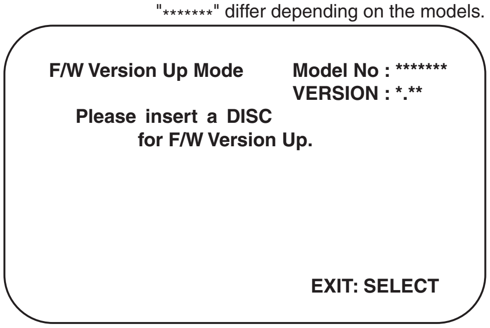


Fig. a Version Up Mode Screen

   The DVD player can also enter the version up mode with the tray open. In this case, Fig. a will be shown on the screen while the tray is open.
3. Load the disc for version up.
4. The DVD player enters the F/W version up mode automatically. Fig. c appears on the screen. If you enter the F/W for different models, “Disc Error” will appear on the screen, then the tray will open automatically.

"*******" differ depending on the models.

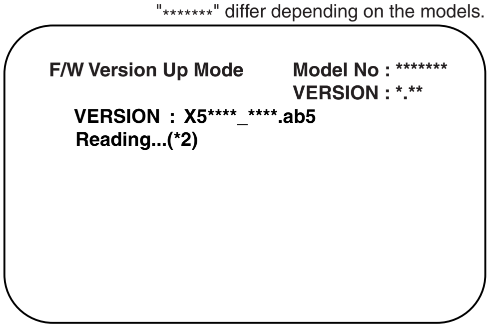


Fig. c Programming Mode Screen

   The appearance shown in (*2) of Fig. c is described as follows:

No.	Appearance	State
1	Reading...	Sending files into the memory
2	Erasing...	Erasing previous version data
3	Programming...	Writing new version data

5. After programming is finished, the tray opens automatically. Fig. e appears on the screen and the checksum in (*3) of Fig. e.

"*******" differ depending on the models.

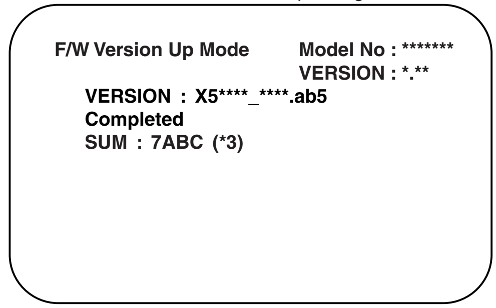


Fig. e Completed Program Mode Screen

   At this time, no buttons are available.
6. Remove the disc on the tray.
7. Press [CH UP/DOWN] button on the unit to go to TV mode, or press [POWER] button on the unit to turn the power off.
8. Press [SELECT] or [DVD PLAY] button on the unit to put the DVD player into DVD mode again.
9. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order.
   Fig. g appears on the screen.

"*******" differ depending on the models.

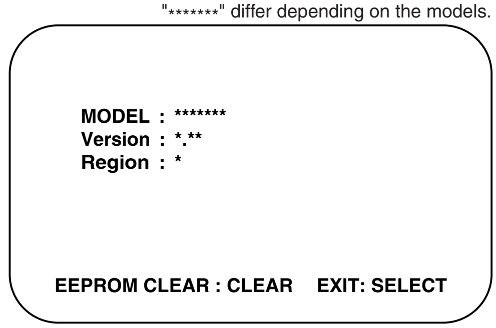


Fig. g

10. Press [CLEAR] button on the remote control unit.
    Fig. h appears on the screen.

"*******" differ depending on the models.

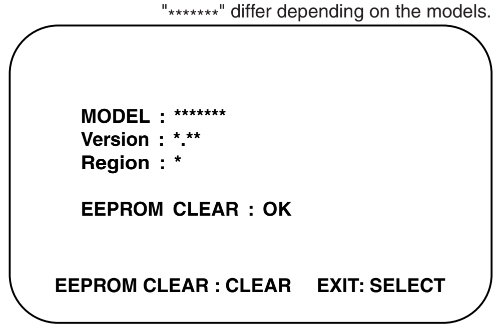
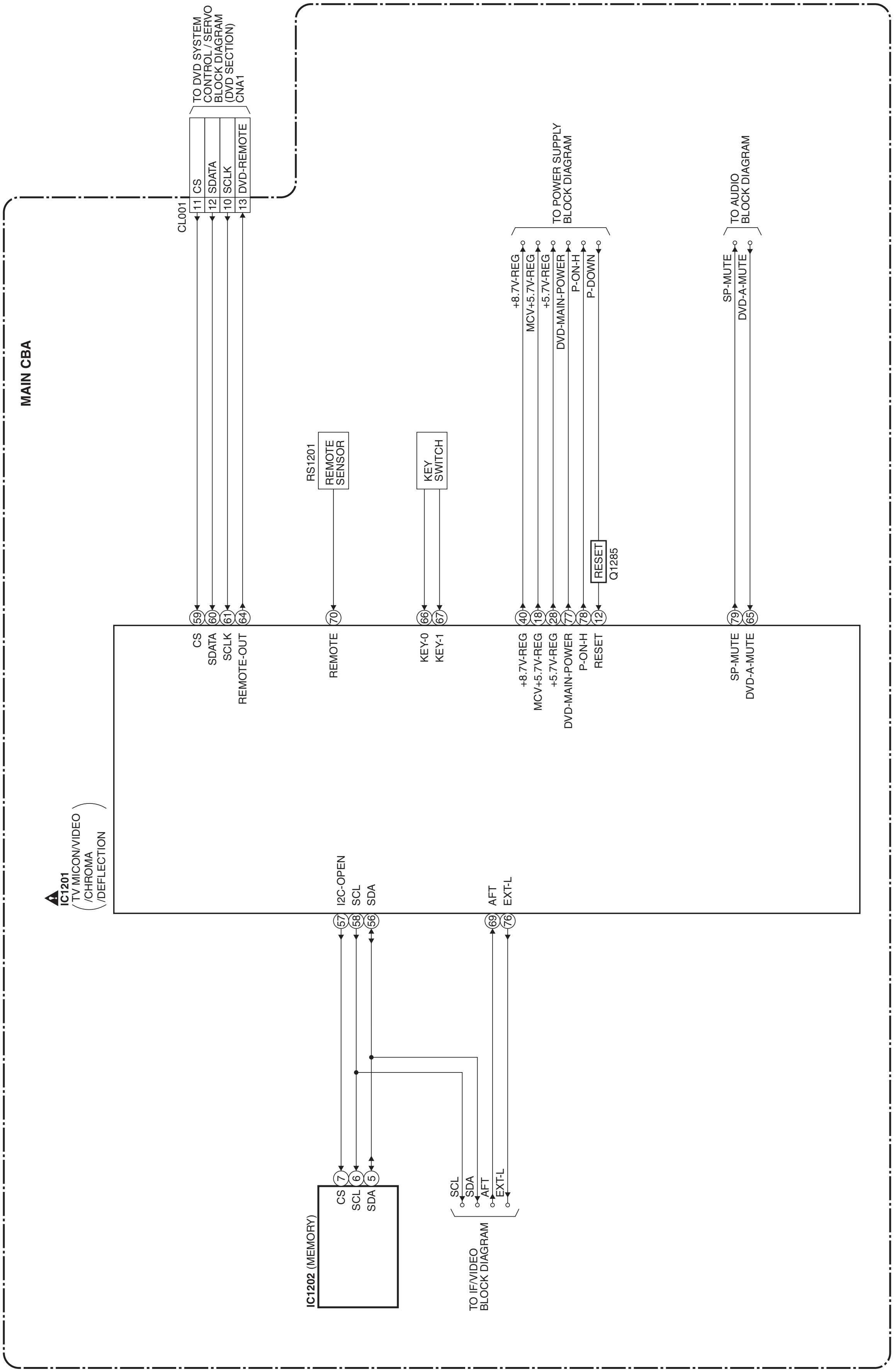


Fig. h

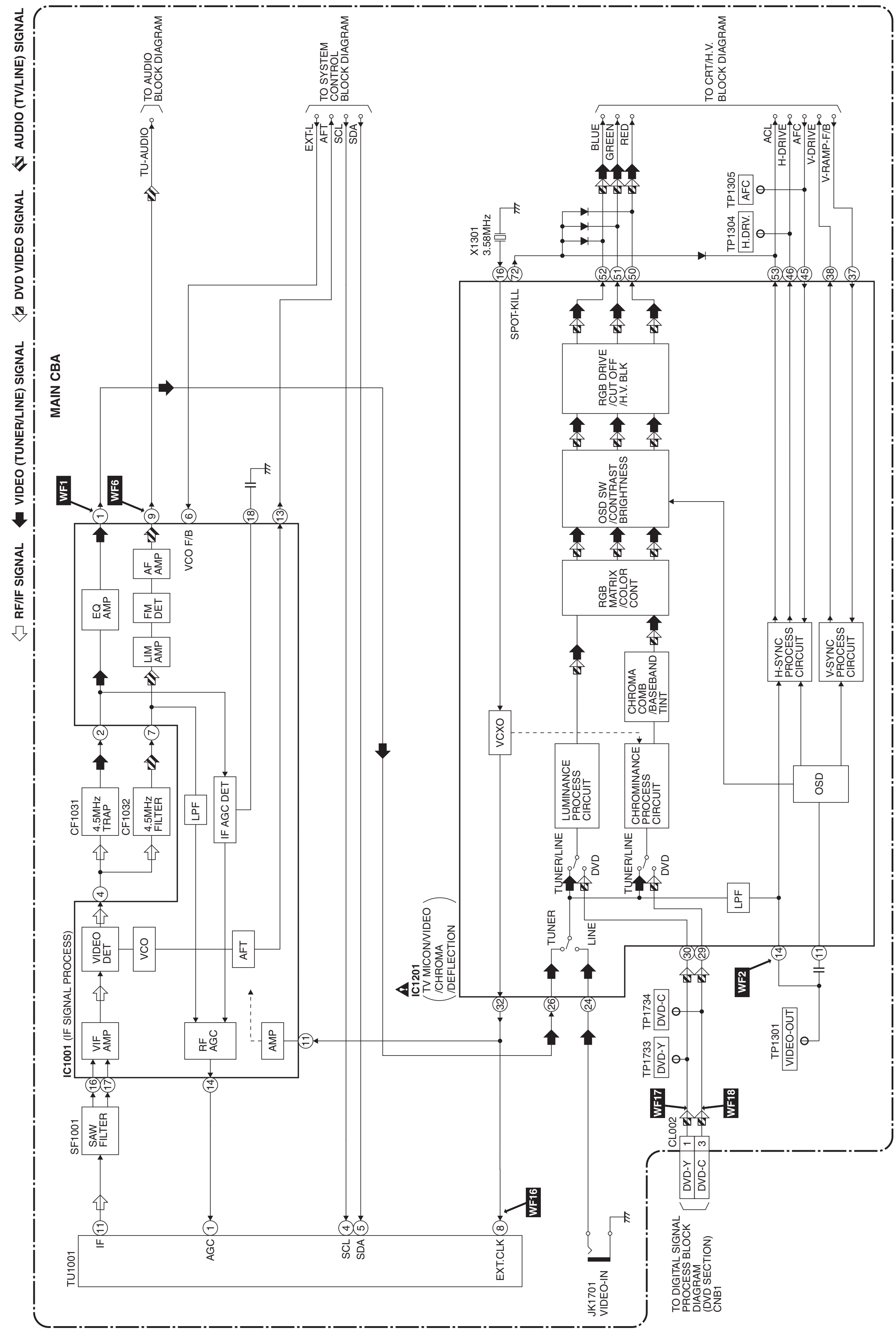
    When “OK” appears on the screen, the factory default will be set. Then the firmware renewal mode is complete.
11. To exit this mode, press [CH UP/DOWN] or [SELECT] button to go to TV mode, or press [POWER] button to turn the power off.

BLOCK DIAGRAMS < TV Section >

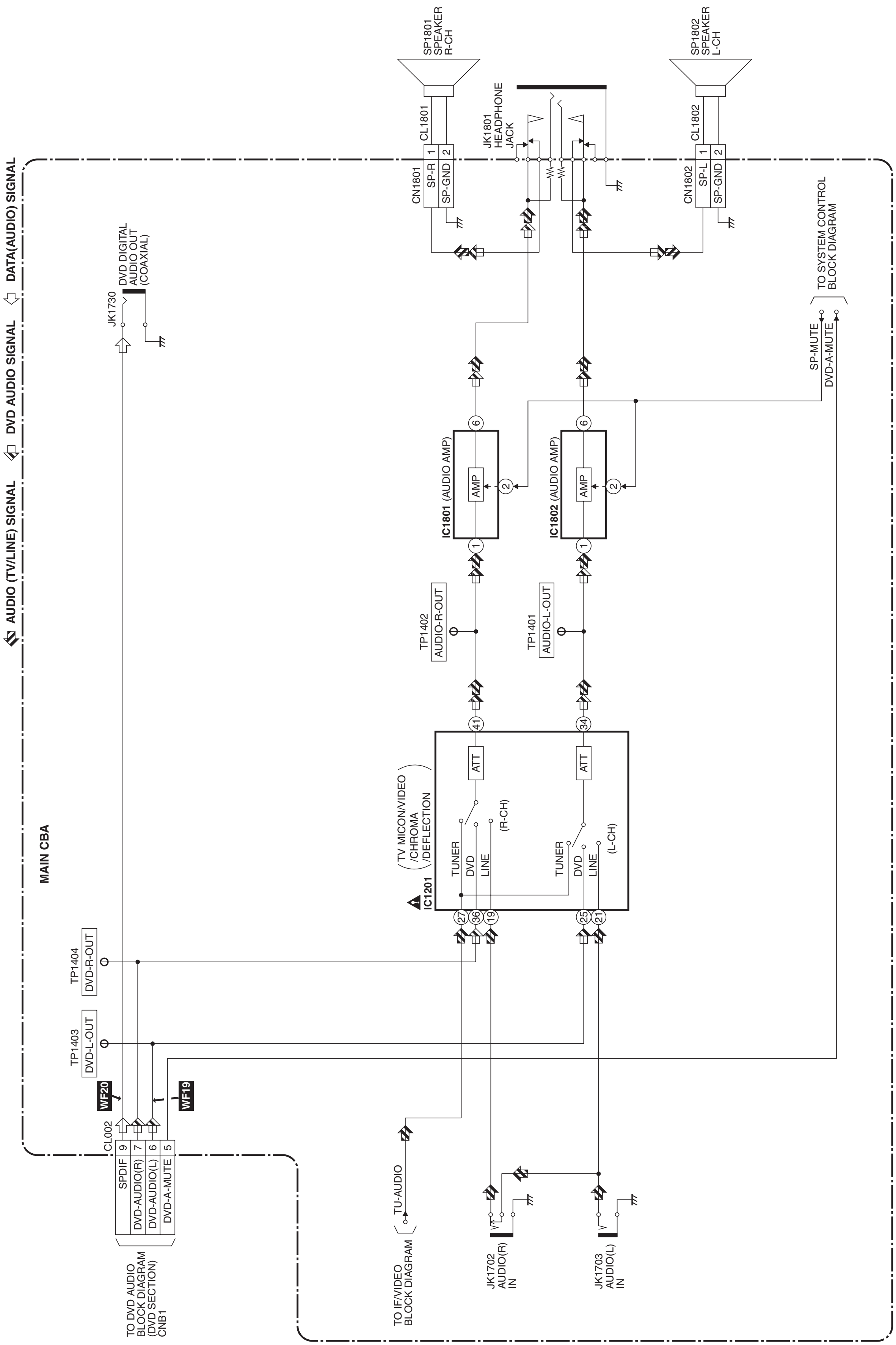
System Control Block Diagram



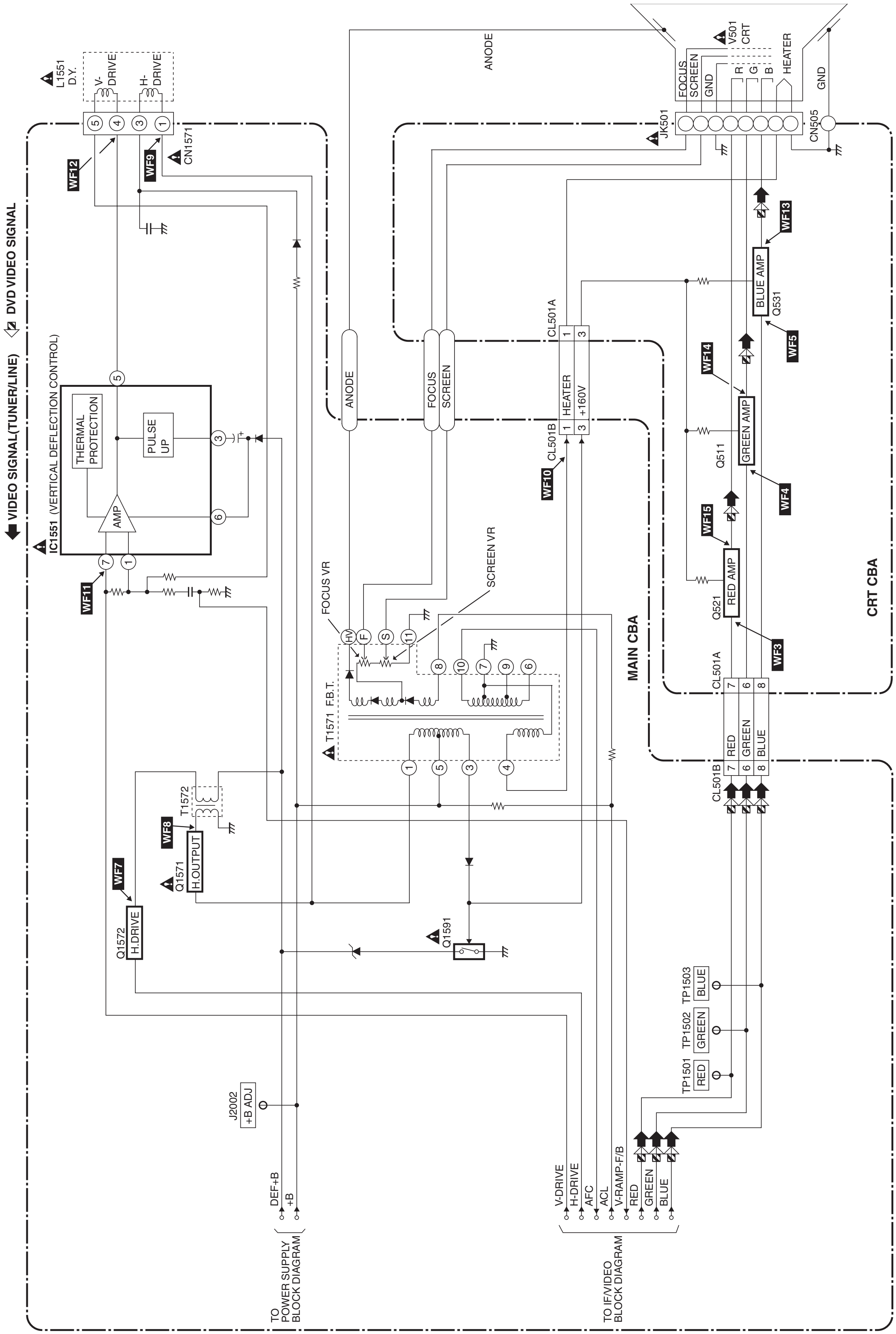
IF/Video Block Diagram



Audio Block Diagram



CRT/H.V. Block Diagram

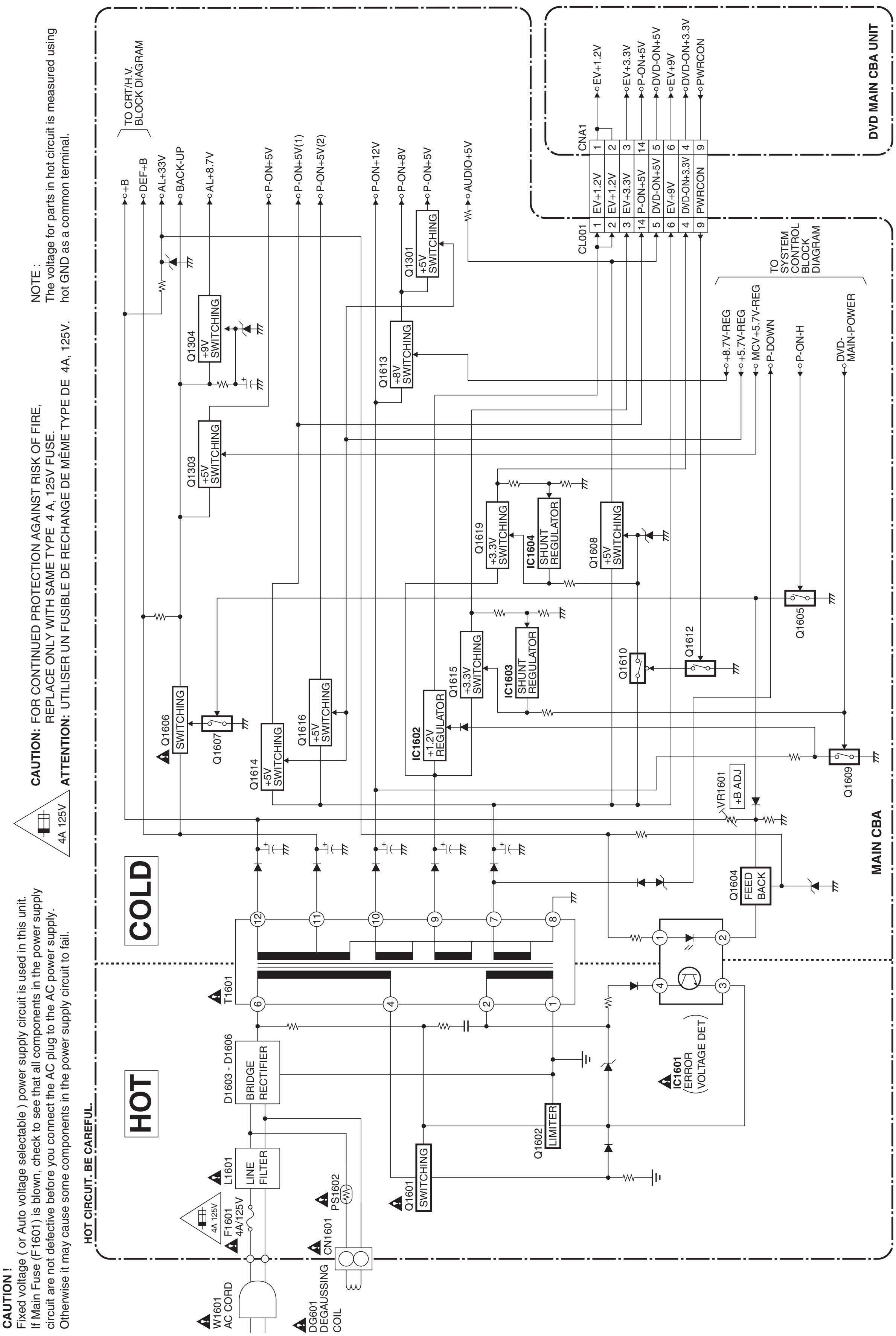


Power Supply Block Diagram

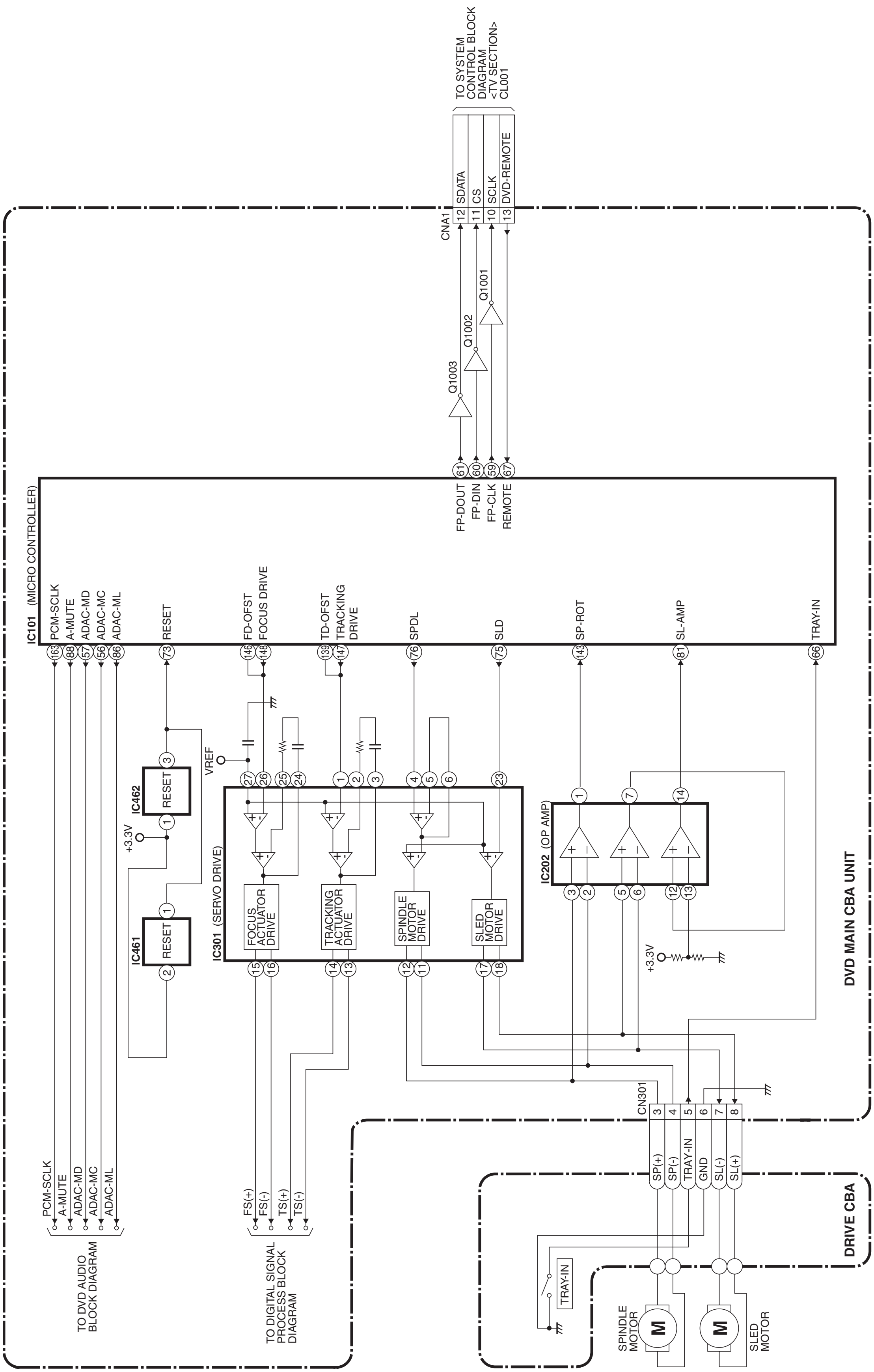
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4 A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.

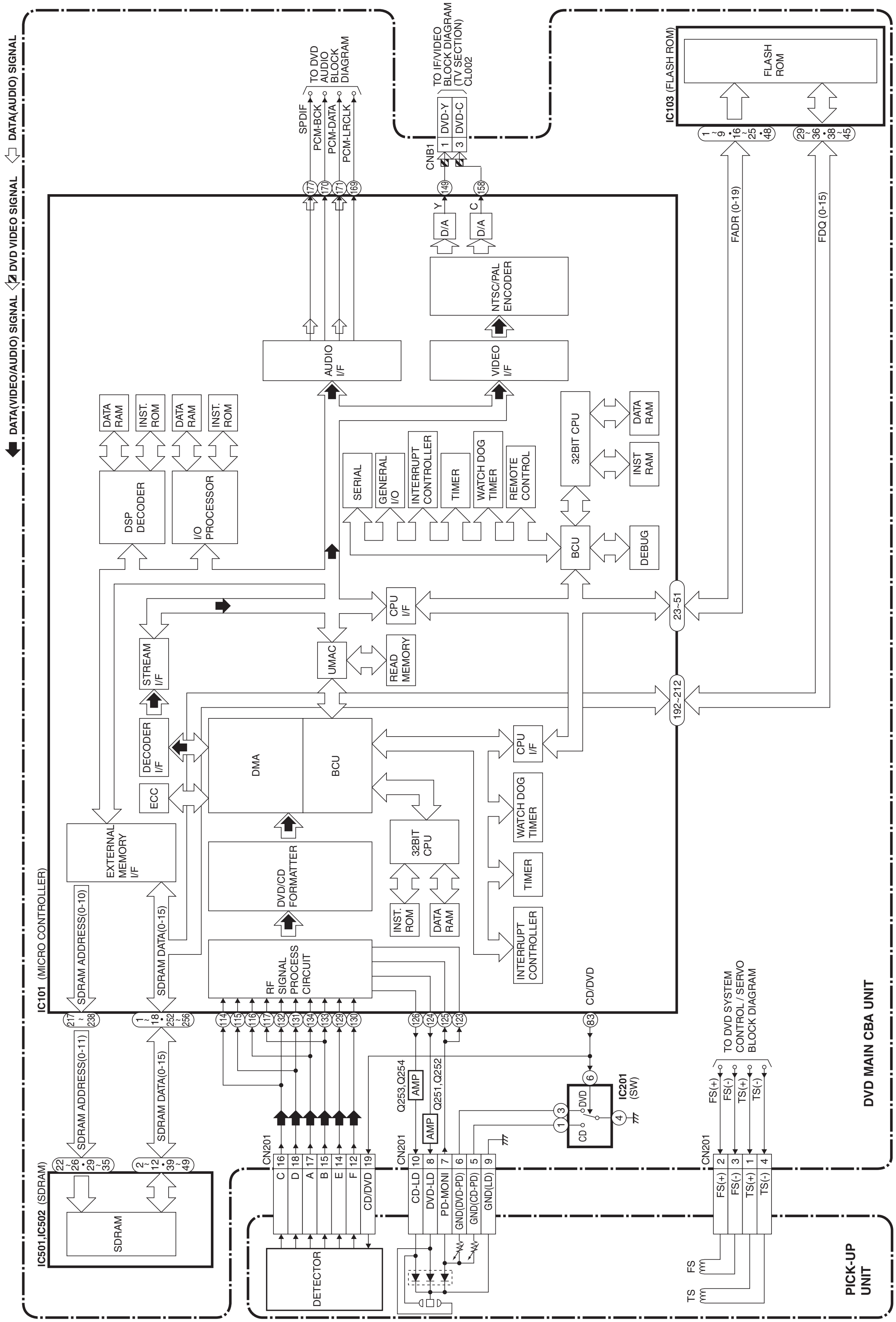
NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



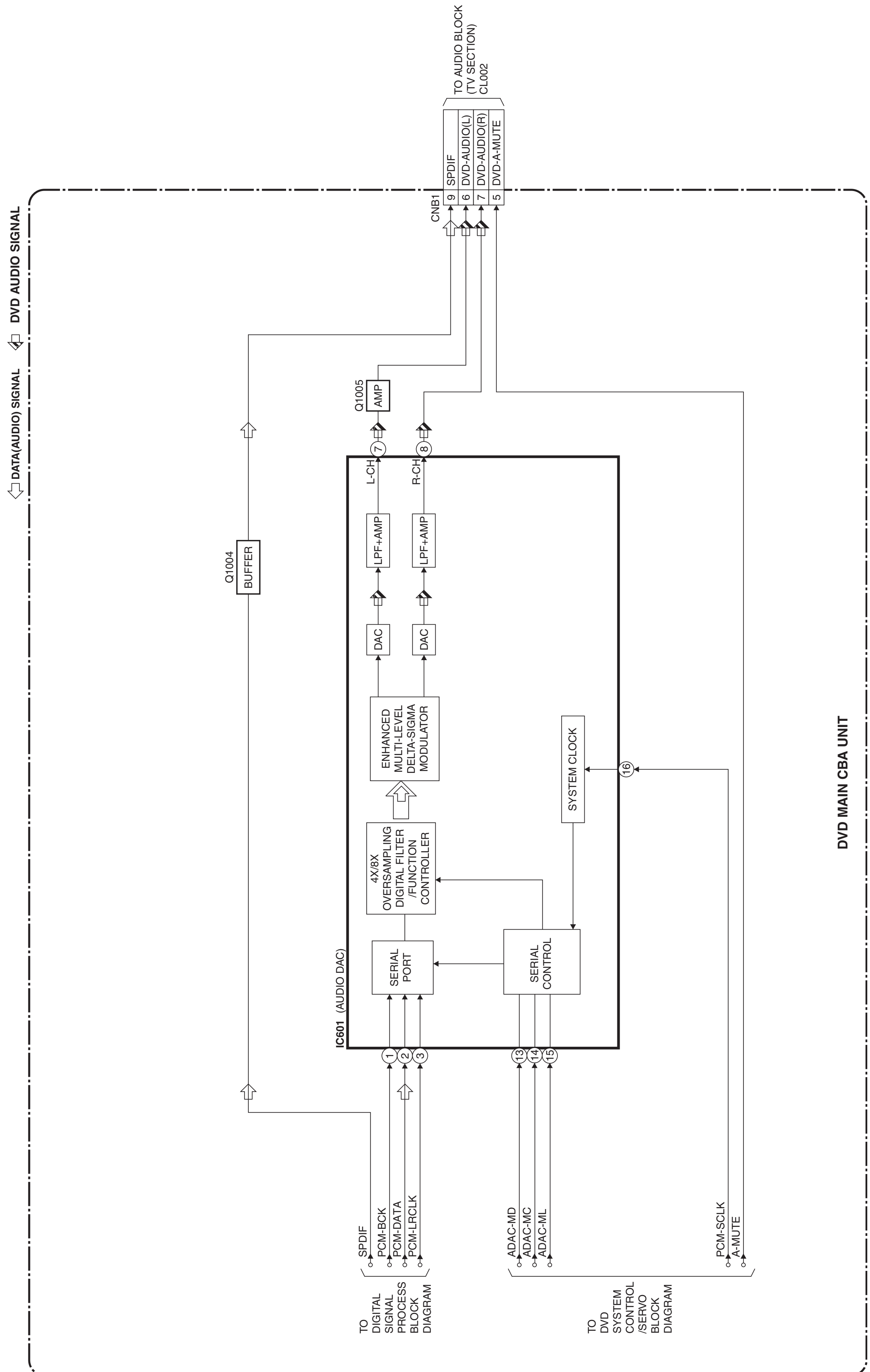
BLOCK DIAGRAMS < DVD Section >
DVD System Control / Servo Block Diagram



Digital Signal Process Block Diagram



DVD Audio Block Diagram



SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

Warning

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

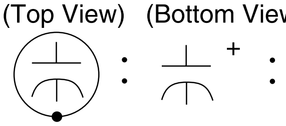
Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 -80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 -80%	20°C	-10~+70°C

Capacitors and transistors are represented by the following symbols.

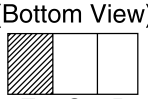
CBA Symbols

(Top View) (Bottom View)



: Electrolytic Capacitor

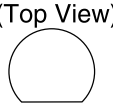
(Bottom View)



: Transistor or Digital Transistor

E C B

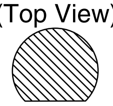
(Top View)



E C B

NPN Transistor

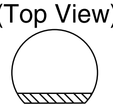
(Top View)



E C B

PNP Transistor

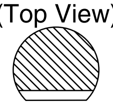
(Top View)



E C B

NPN Digital Transistor

(Top View)



E C B

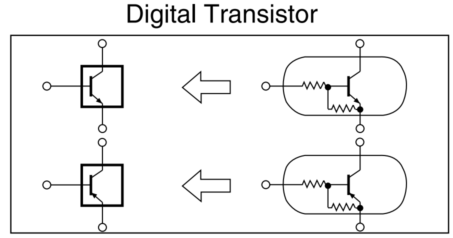
PNP Digital Transistor

Note:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in µF ($P=10^{-6}$µF).
5. All voltages are DC voltages unless otherwise specified.

Schematic Diagram Symbols

Digital Transistor



LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE_A,_V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE_A,_V.

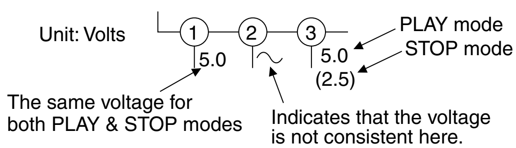
2. CAUTION:
Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. Note:
(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

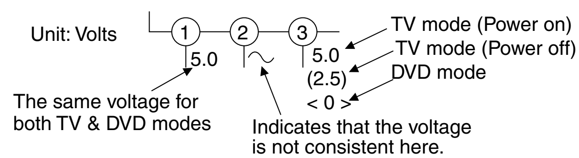
4. Mode: SP/REC

5. Voltage indications on the schematics are as shown below:
Plug the TV power cord into a standard AC outlet.:

< DVD Section >



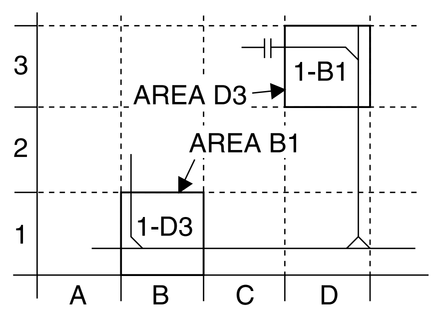
< TV Section > Unit: Volts



6. How to read converged lines

1-D3
Distinction Area
Line Number
(1 to 3 digits)

Examples:
1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".

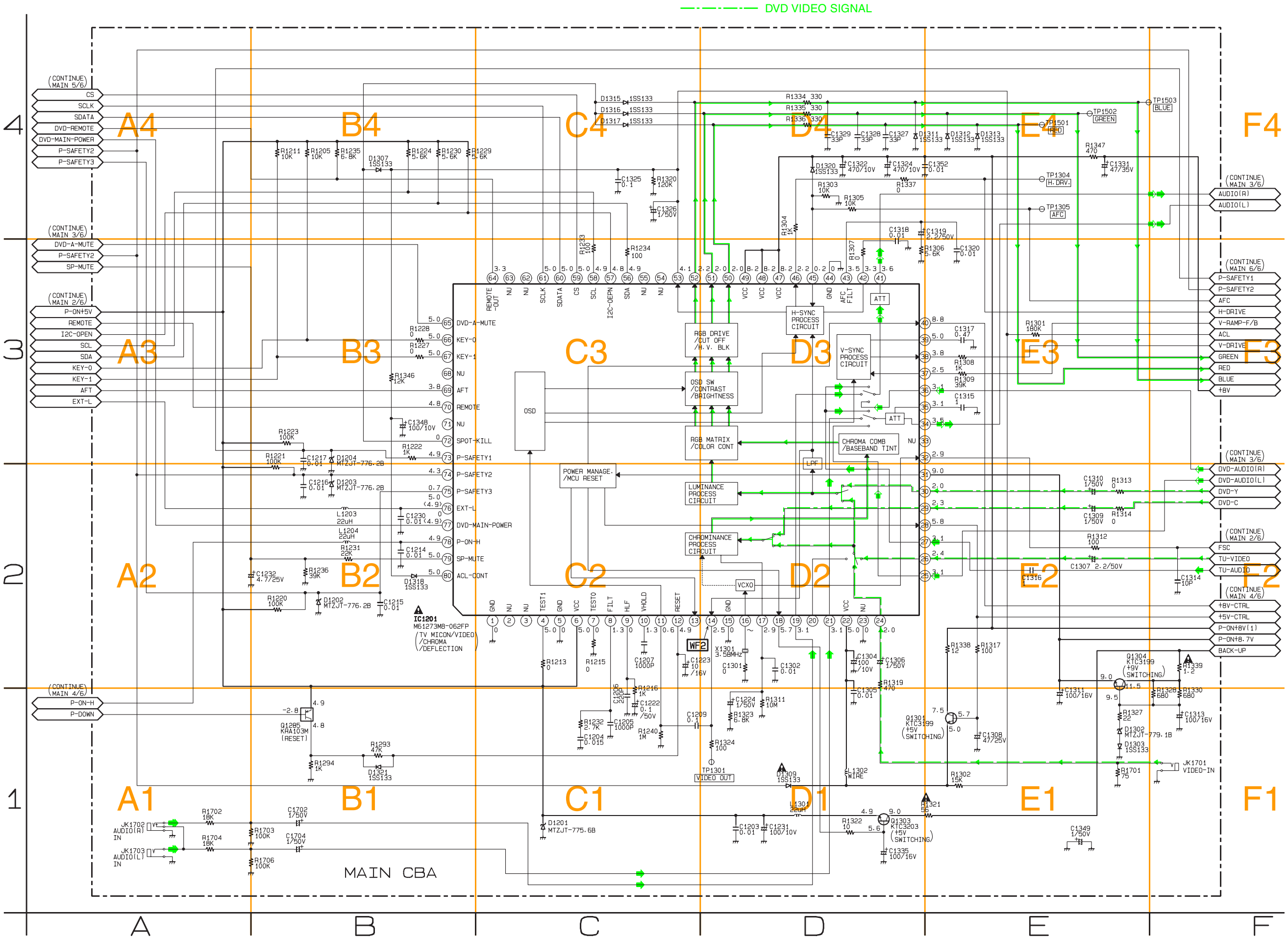


7. Test Point Information

: Indicates a test point with a jumper wire across a hole in the PCB.
: Used to indicate a test point with a component lead on foil side.
: Used to indicate a test point with no test pin.
: Used to indicate a test point with a test pin.

Main 1/6 Schematic Diagram ＜TV Section＞

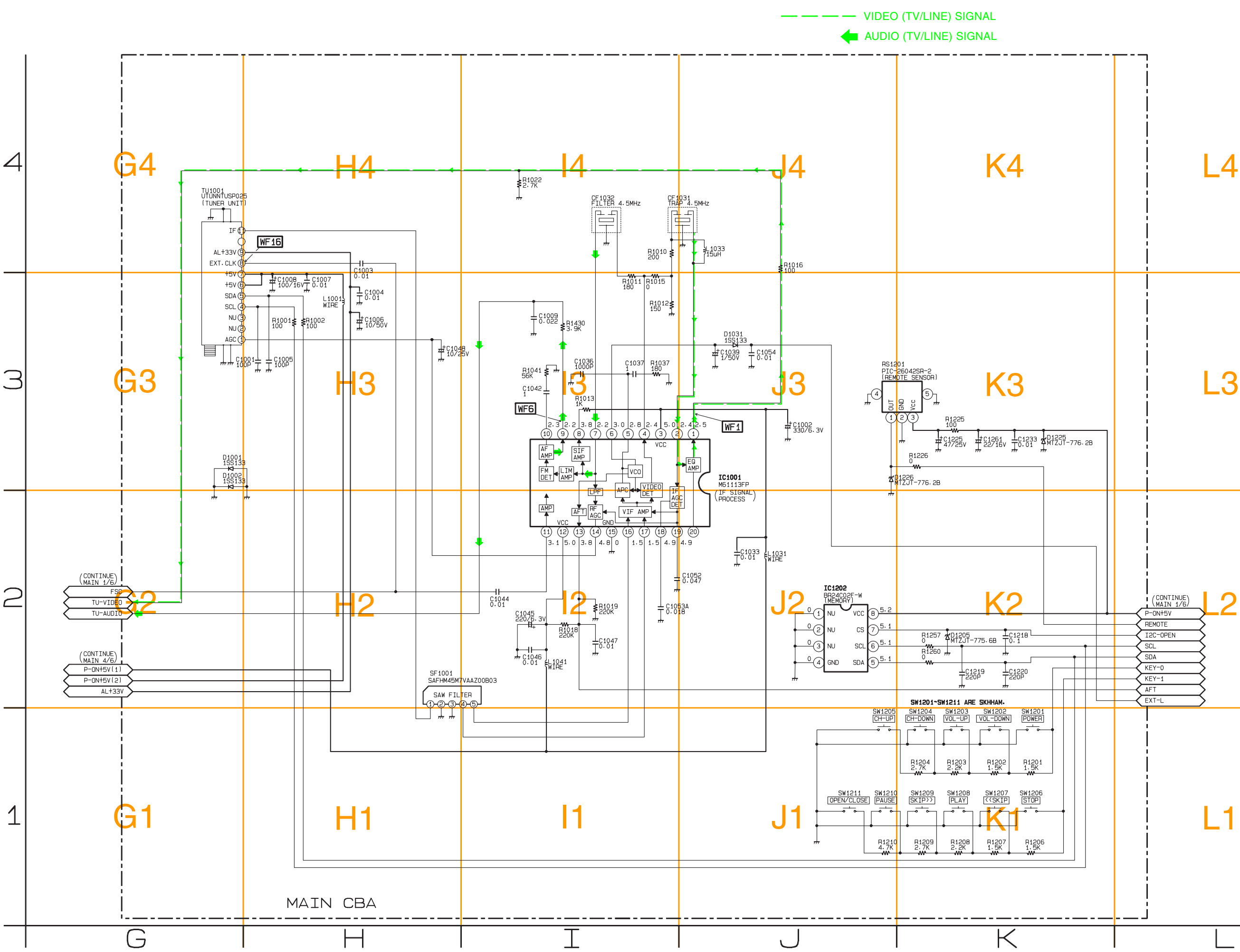
VIDEO (TV/LINE) + DVD VIDEO SIGNAL
VIDEO (TV/LINE) SIGNAL
DVD VIDEO SIGNAL
AUDIO (TV/LINE) SIGNAL
DVD AUDIO SIGNAL



MAIN 1/6

Ref No.	Position
IC	
IC1201	B-2
TRANSISTORS	
Q1285	B-1
Q1301	E-1
Q1303	D-1
Q1304	E-2
TEST POINTS	
TP1301	D-1
TP1304	E-4
TP1305	E-4
TP1501	E-4
TP1502	E-4
TP1503	F-4

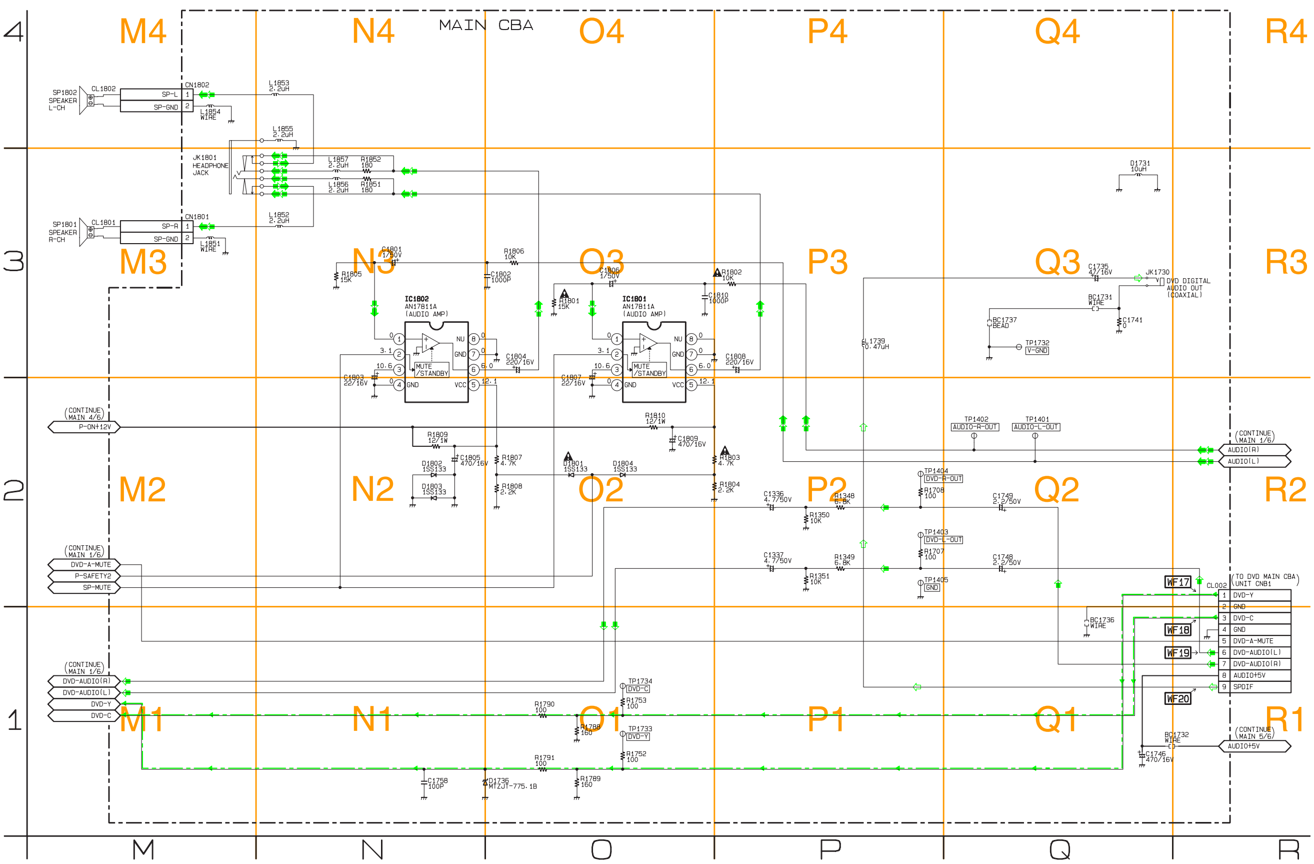
Main 2/6 Schematic Diagram < TV Section >



MAIN 2/6	
Ref No.	Position
ICS	
IC1001	J-2
IC1202	J-2

Main 3/6 Schematic Diagram < TV Section >

DVD VIDEO SIGNAL
AUDIO (TV/LINE) SIGNAL
DVD AUDIO SIGNAL
DATA (AUDIO) SIGNAL



MAIN 3/6

Ref No.	Position
ICS	
IC1801	O-3
IC1802	N-3
CONNECTORS	
CL002	R-2
CN1801	M-3
CN1802	M-4
TEST POINTS	
TP1401	Q-2
TP1402	Q-2
TP1403	P-2
TP1404	P-2
TP1405	P-2
TP1732	Q-3
TP1733	O-1
TP1734	O-1

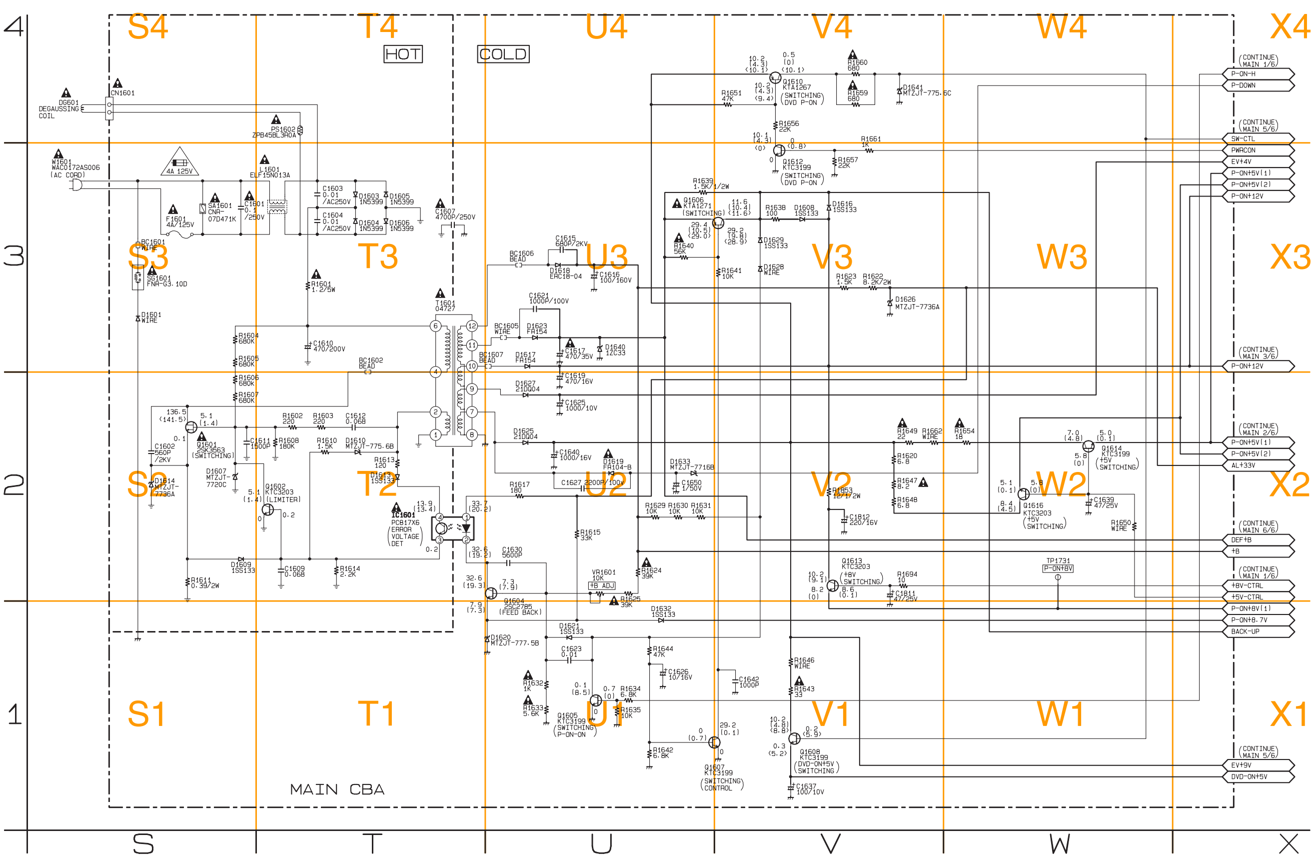
Main 4/6 Schematic Diagram < TV Section >

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

4A/125V

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



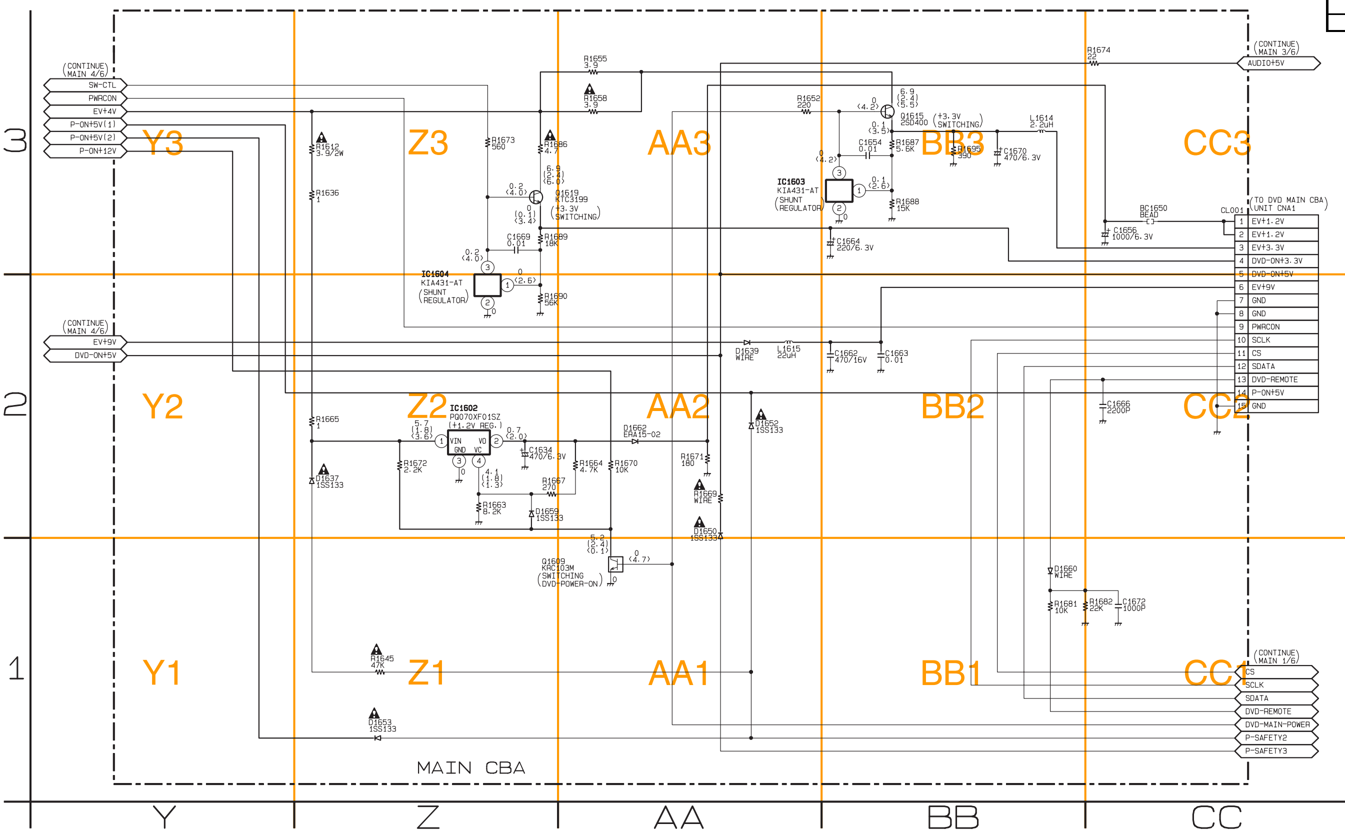
MAIN 4/6

Ref No.	Position
IC	
IC1601	T-2
TRANSISTORS	
Q1601	S-2
Q1602	T-2
Q1604	U-2
Q1605	U-1
Q1606	U-3
Q1607	V-1
Q1608	V-1
Q1610	V-4
Q1612	V-3
Q1613	V-2
Q1614	W-2
Q1616	W-2
CONNECTOR	
CN1601	S-4
TEST POINT	
TP1731	W-2
VARIABLE RESISTOR	
VR1601	U-2

Main 5/6 Schematic Diagram < TV Section >

MAIN 5/6

Ref No.	Position
ICS	
IC1602	Z-2
IC1603	AA-3
IC1604	Z-2
TRANSISTORS	
Q1609	Z-1
Q1615	BB-3
Q1619	AA-3
CONNECTOR	
CL001	CC-3



T8001SCM5

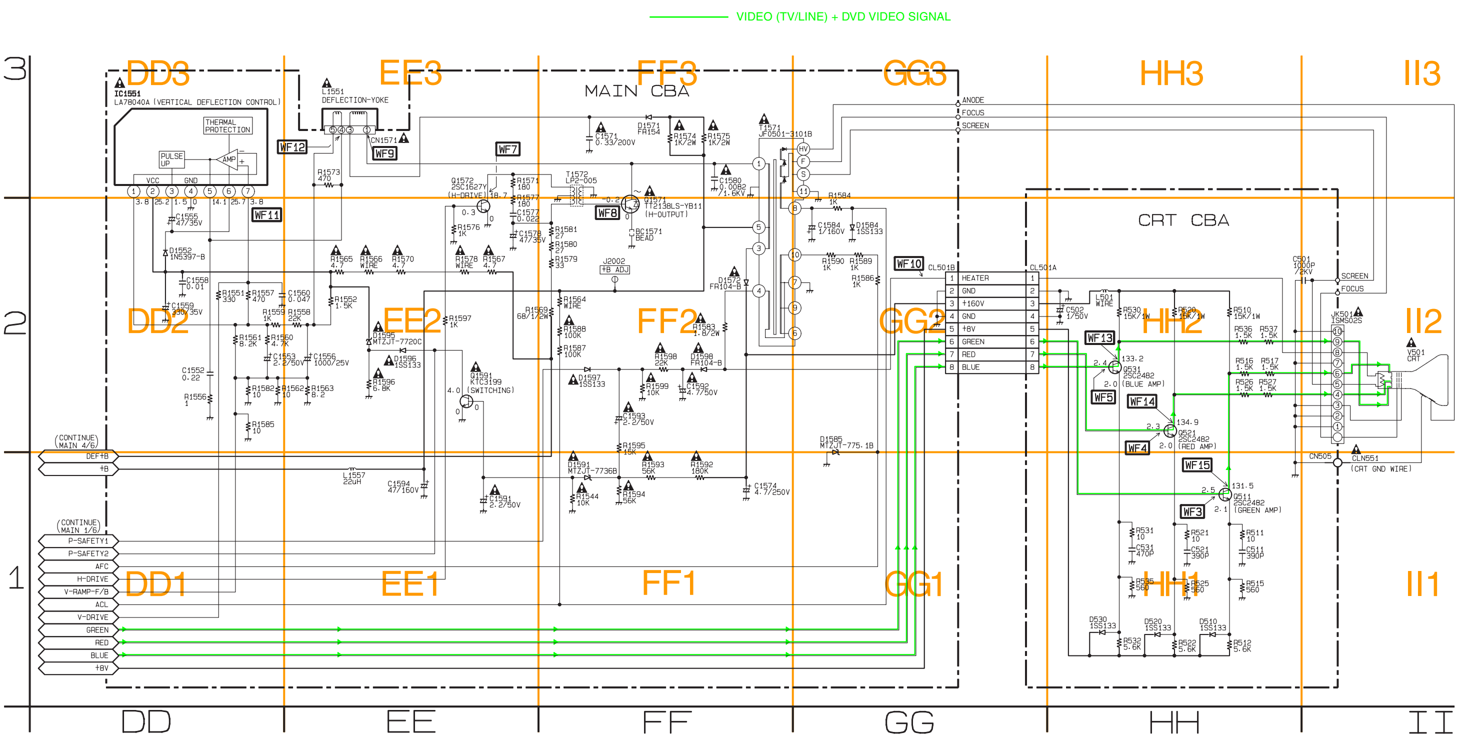
Main 6/6 & CRT Schematic Diagram < TV Section >

MAIN 6/6

Ref No.	Position
IC	
IC1551	DD-3
TRANSISTORS	
Q1571	FF-2
Q1572	EE-3
Q1591	EE-2
CONNECTORS	
CL501B	GG-2
CN1571	EE-3
TEST POINT	
J2002	FF-2

CRT

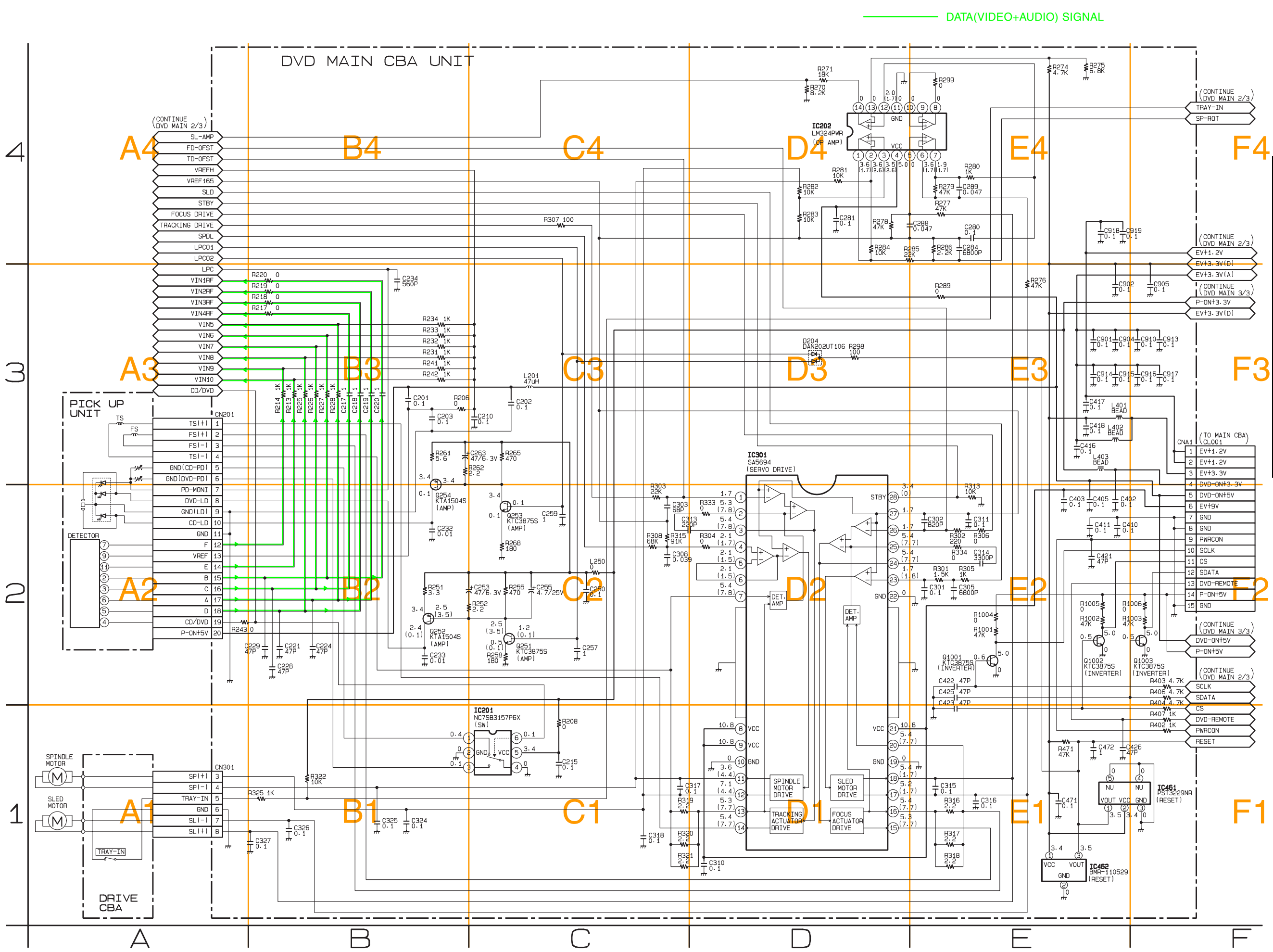
Ref No.	Position
TRANSISTORS	
Q511	HH-1
Q521	HH-2
Q531	HH-2
CONNECTORS	
CN505	II-1
CL501A	GG-2



1-9-13

1-9-14

DVD Main 1/3 Schematic Diagram < DVD Section >



DVD MAIN 1/3

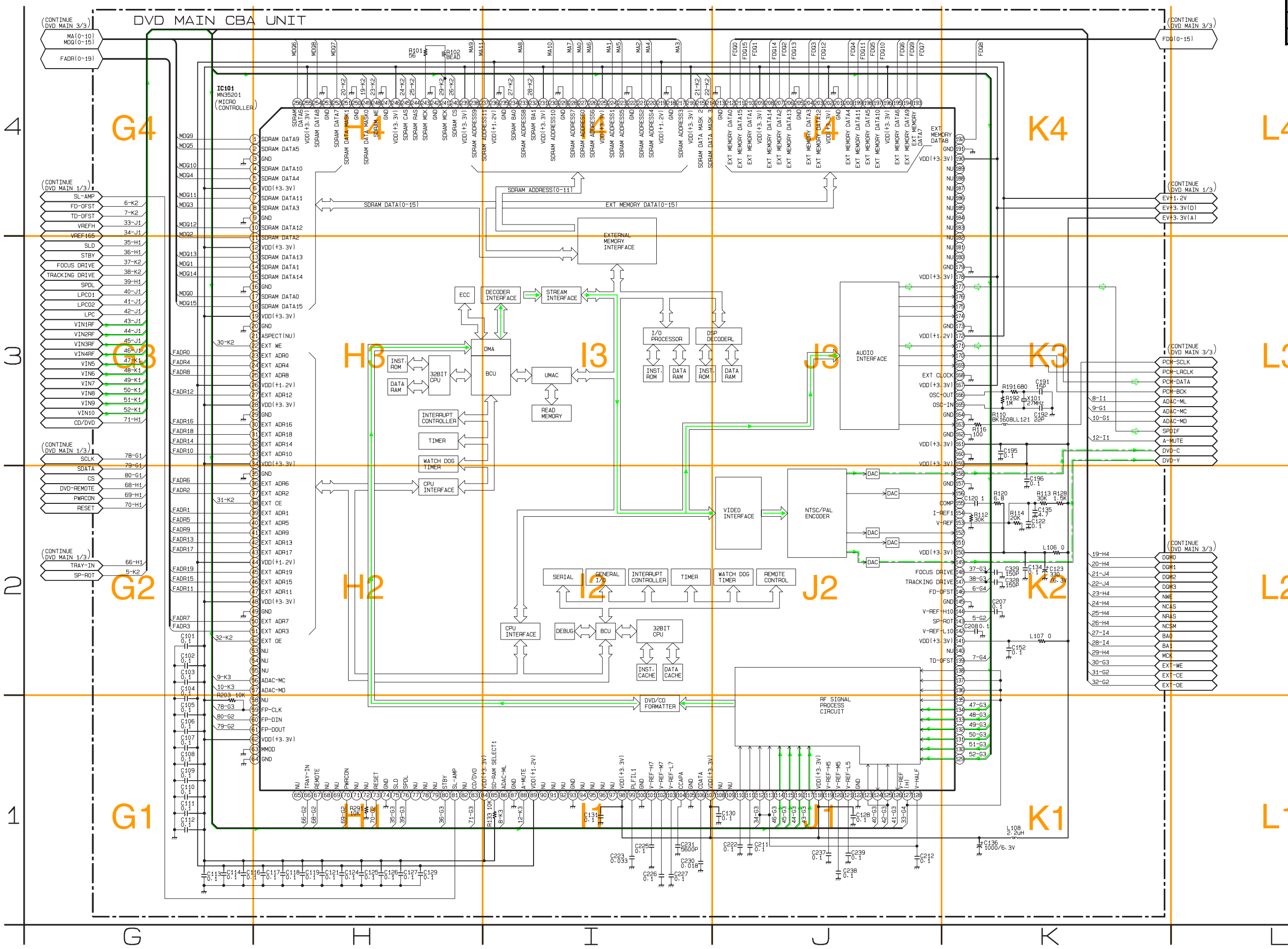
Ref No.	Position
ICS	
IC201	C-1
IC202	E-4
IC301	D-3
IC461	F-1
IC462	E-1
TRANSISTORS	
Q251	C-2
Q252	B-2
Q253	C-2
Q254	B-2
Q1001	E-2
Q1002	E-2
Q1003	F-2
CONNECTORS	
CN201	A-3
CN301	A-1
CNA1	F-3

DVD Main 2/3 Schematic Diagram < DVD Section >

DATA(VIDEO+AUDIO) SIGNAL
DATA (AUDIO) SIGNAL
DVD VIDEO SIGNAL

DVD MAIN 2/3

Ref No.	Position
IC	
IC101	G-4

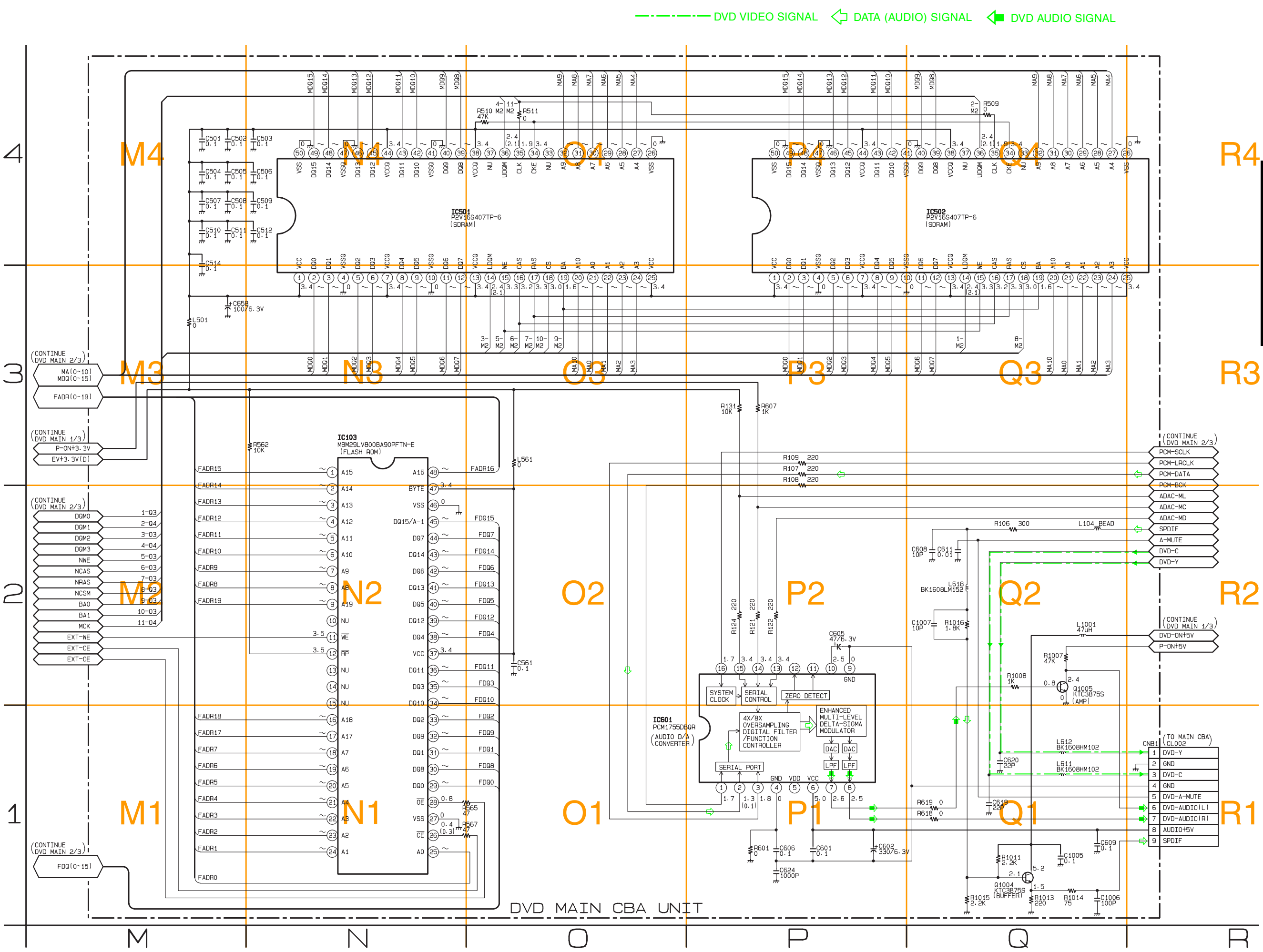


T8001SCD2

IC101 VOLTAGE CHART

PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP
1	~	~	33	~	~	65	-----	-----	97	-----	-----	129	2.3	2.3	161	3.4	3.4	193	~	~	225	3.4	3.4
2	~	~	34	3.4	3.4	66	3.4	3.5	98	3.4	3.4	130	2.3	2.3	162	0	0	194	~	~	226	~	~
3	0	0	35	0	0	67	3.2	3.2	99	0.9	0.8	131	2.3	2.3	163	1.8	1.8	195	~	~	227	~	~
4	~	~	36	~	~	68	-----	-----	100	0	0	132	2.4	2.3	164	0	0	196	3.4	3.4	228	~	~
5	~	~	37	~	~	69	-----	-----	101	2.4	2.4	133	2.4	2.4	165	1.7	1.8	197	~	~	229	0	0
6	3.4	3.4	38	0.4	0.3	70	3.4	3.4	102	2.2	2.2	134	2.4	2.4	166	1.7	1.7	198	~	~	230	~	~
7	~	~	39	~	~	71	-----	-----	103	1.9	1.9	135	2.3	2.3	167	3.4	3.4	199	~	~	231	3.4	3.4
8	~	~	40	~	~	72	1.4	2.7	104	0.4	0.3	136	2.3	2.3	168	0	0	200	~	~	232	1.3	1.6
9	0	0	41	~	~	73	3.4	3.4	105	0	0	137	2.3	2.3	169	1.8	1.8	201	0	0	233	~	~
10	~	~	42	~	~	74	0	0	106	1.7	1.7	138	2.3	2.3	170	1.7	1.7	202	3.4	3.4	234	1.9	2.3
11	~	~	43	~	~	75	1.7	1.8	107	3.4	3.4	139	1.7	1.7	171	1.3	0.1	203	~	~	235	0	0
12	3.4	3.4	44	1.3	1.3	76	2.3	1.8	108	-----	-----	140	-----	-----	172	1.3	1.3	204	~	~	236	1.3	1.3
13	~	~	45	~	~	77	-----	-----	109	-----	-----	141	3.4	3.4	173	0	0	205	0	0	237	~	~
14	~	~	46	~	~	78	-----	-----	110	1.9	1.9	142	1.3	1.3	174	-----	-----	206	~	~	238	~	~
15	~	~	47	~	~	79	-----	-----	111	1.9	1.9	143	2.1	1.7	175	-----	-----	207	~	~	239	3.4	3.4
16	0	0	48	3.4	3.4	80	3.4	0.1	112	1.7	1.7	144	2.2	2.2	176	-----	-----	208	~	~	240	3.4	3.3
17	~	~	49	0	0	81	0.1	0.1	113	1.7	1.7	145	0	0	177	1.8	1.7	209	3.4	3.4	241	1.9	1.9
18	~	~	50	~	~	82	-----	-----	114	1.7	1.7	146	1.7	1.7	178	3.4	3.5	210	~	~	242	0	0
19	3.4	3.4	51	~	~	83	0.1	0.1	115	1.7	1.7	147	1.8	1.7	179	0	0	211	~	~	243	1.9	1.9
20	0	0	52	0.8	0.8	84	3.4	3.4	116	1.7	1.7	148	1.7	1.7	180	-----	-----	212	~	~	244	3.4	3.3
21	-----	-----	53	-----	-----	85	0.1	0.1	117	1.7	1.7	149	0.6	0.5	181	-----	-----	213	0	0	245	3.4	3.4
22	3.5	3.5	54	-----	-----	86	3.6	3.4	118	3.4	3.4	150	3.4	3.4	182	-----	-----	214	2.5	3.0	246	3.4	3.4
23	~	~	55	-----	-----	87	0	0	119	2.0	2.0	151	-----	-----	183	-----	-----	215	2.5	3.0	247	0	0
24	~	~	56	3.4	3.4	88	3.5	0.1	120	1.7	1.7	152	-----	-----	184	-----	-----	216	3.4	3.4	248	3.3	3.4
25	~	~	57	3.5	3.5	89	1.3	1.3	121	1.5	1.5	153	1.4	1.3	185	-----	-----	217	~	~	249	3.2	3
26	1.3	1.3	58	-----	-----	90	-----	-----	122	0	0	154	1.4	1.3	186	-----	-----	218	0	0	250	0	0
27	~	~	59	3.4	3.4	91	-----	-----	123	0.3	0.1	155	2.4	2.4	187	-----	-----	219	1.3	1.3	251	3.2	3.0
28	3.4	3.4	60	3.4	3.4	92	-----	-----	124	1.2	0.1	156	-----	-----	188	-----	-----	220	~	~	252	~	~
29	0	0	61	3.5	3.5	93	0	0	125	0.3	0.1	157	0	0	189	-----	-----	221	~	~	253	0	0
30	~	~	62	3.4	3.4	94	-----	-----	126	0.1	0.1	158	0.9	0.9	190	3.4	3.5	222	0	0	254	~	~
31	~	~	63	0	0	95	-----	-----	127	2.3	2.3	159	3.4	3.4	191	0	0	223	~	~	255	3.4	3.4
32	~	~	64	0	0	96	-----	-----	128	1.7	1.7	160	0	0	192	~	~	224	~	~	256	~	~

DVD Main 3/3 Schematic Diagram < DVD Section >



DVD MAIN 3/3

Ref No.	Position
ICS	
IC103	N-3
IC501	N-4
IC502	Q-4
IC601	O-1
TRANSISTORS	
Q1004	Q-1
Q1005	Q-2
CONNECTOR	
CNB1	R-1

Main CBA Top View <TV Section>

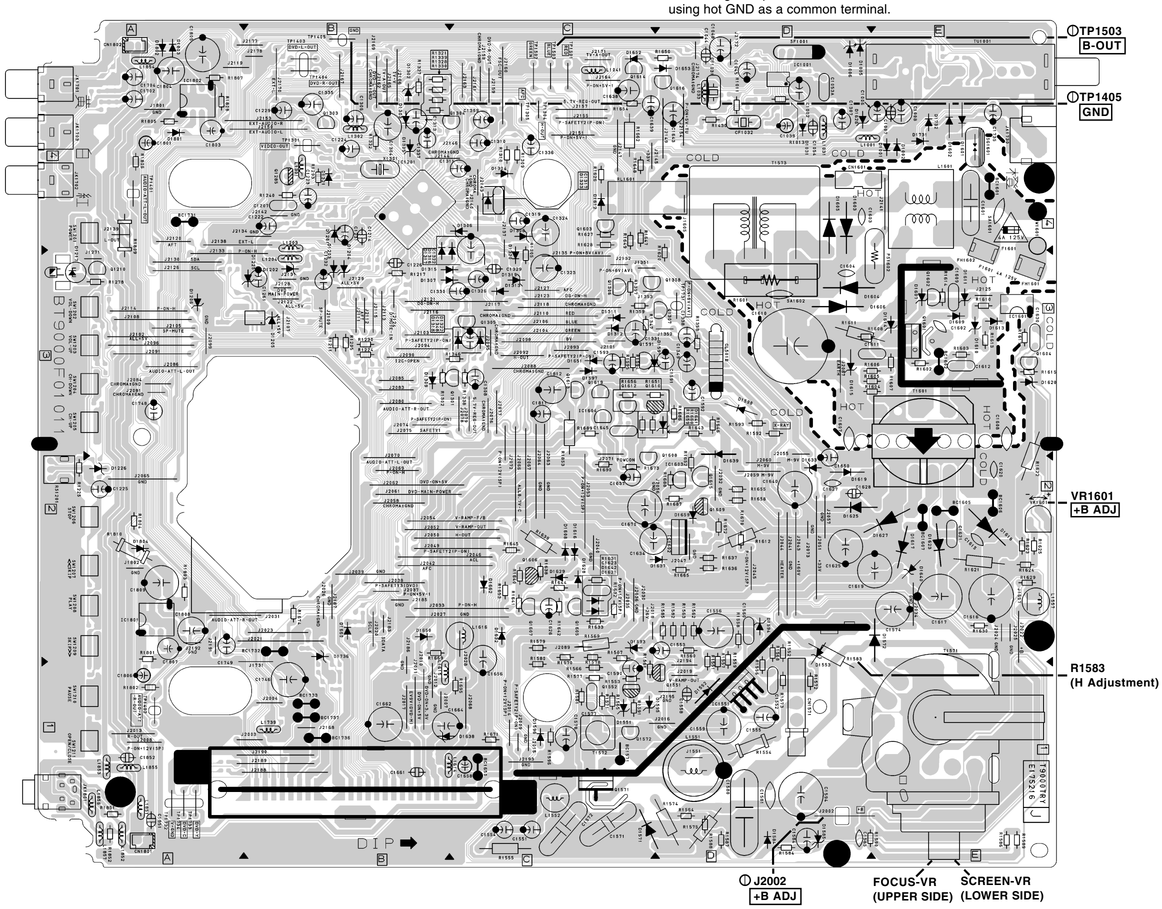
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED. ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.



MAIN CBA

Ref No.	Position	Ref No.	Position
ICS		TRANSISTORS	
IC1001	D-4	Q1615	D-2
IC1201	B-4	Q1616	D-4
IC1202	B-3	Q1619	C-3
IC1551	D-1	CONNECTORS	
IC1601	E-3	CL001	B-1
IC1602	D-2	CL002	B-1
IC1603	D-2	CL501B	D-3
IC1604	C-3	CN1571	D-1
IC1801	A-2	CN1601	D-4
IC1802	A-4	CN1801	A-1
TRANSISTORS		CN1802	A-4
Q1285	B-4	TEST POINTS	
Q1301	C-3	J2002	D-1
Q1303	B-4	TP1301	B-4
Q1304	B-4	TP1304	C-4
Q1571	C-1	TP1305	C-4
Q1572	C-1	TP1401	A-4
Q1591	C-3	TP1402	A-1
Q1601	E-3	TP1403	B-4
Q1602	E-3	TP1404	B-4
Q1604	E-3	TP1405	B-4
Q1605	C-2	TP1501	C-4
Q1606	C-2	TP1502	C-4
Q1607	C-2	TP1503	C-4
Q1608	D-2	TP1731	D-3
Q1609	D-2	TP1732	A-1
Q1610	C-3	TP1733	A-1
Q1612	C-3	TP1734	A-1
Q1613	C-3	VARIABLE RESISTOR	
Q1614	C-4	VR1601	E-2

Main CBA Bottom View < TV Section >

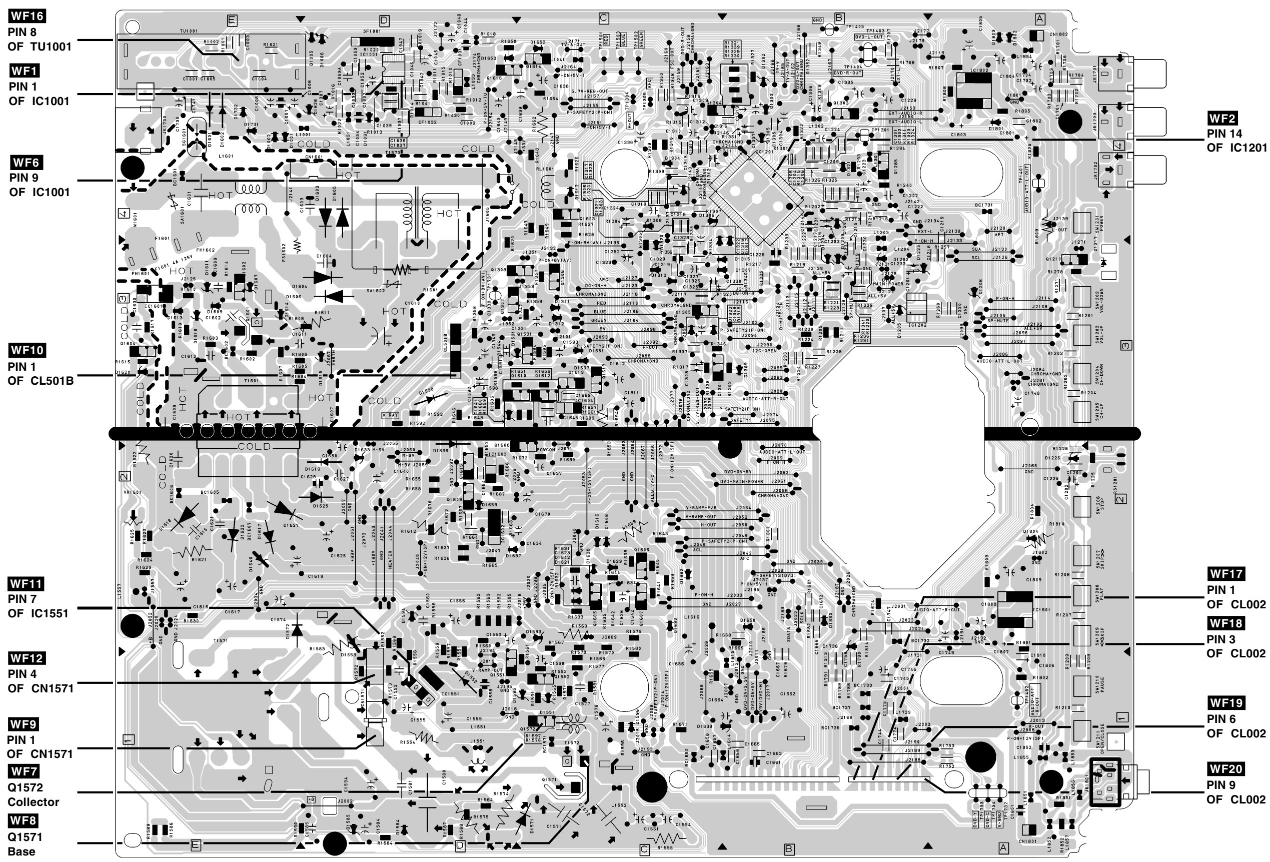
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED. ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

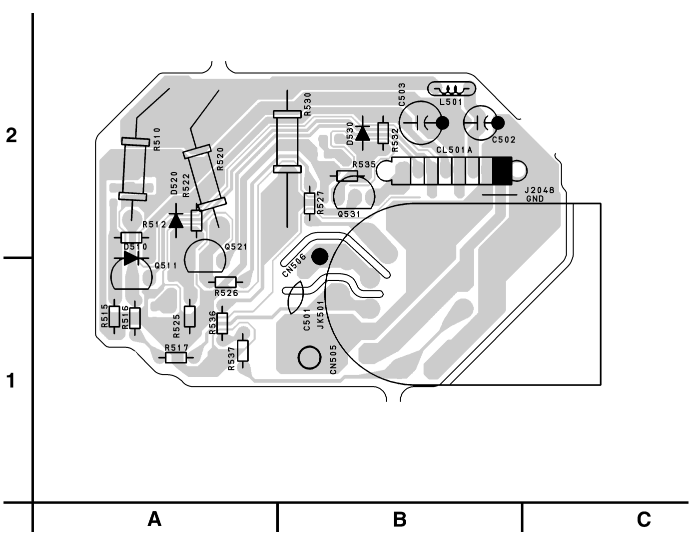


BT9000F01011

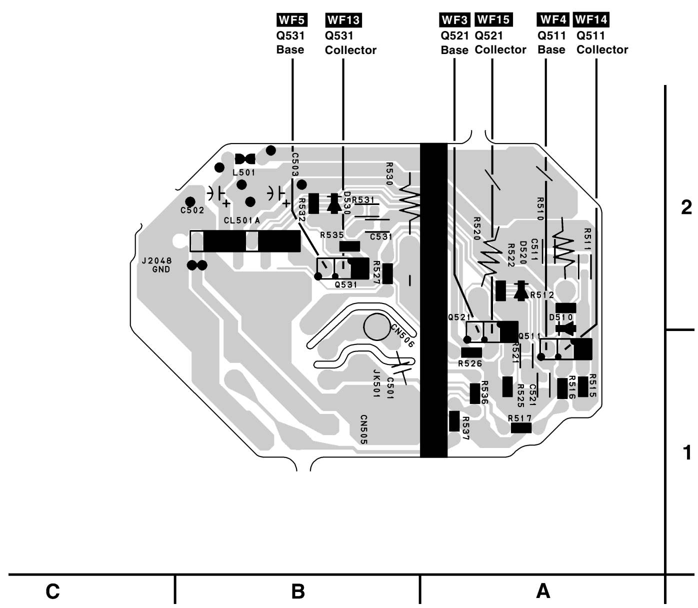
CRT CBA Top View < TV Section >

CRT CBA

Ref No.	Position
TRANSISTORS	
Q511	A-1
Q521	A-2
Q531	B-2
CONNECTORS	
CN505	B-1
CL501A	B-2



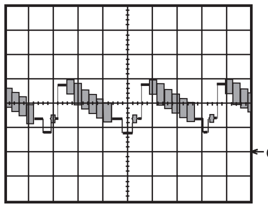
CRT CBA Bottom View < TV Section >



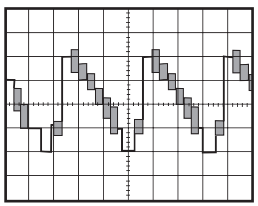
WAVEFORMS

WF1 ~ WF20 = Waveforms to be observed at Waveform check points. (Shown in Schematic Diagram.)

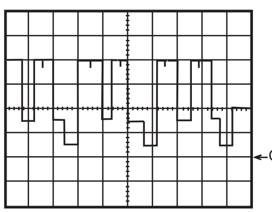
Input: NTSC Color Bar Signal (with 1kHz Audio Signal) --- WF1~WF16
DVD Video (Power on (Stop) MODE) --- WF17, WF18
CD (1KHz Play) --- WF19, WF20
INITIAL POSITION: Unplug unit from AC outlet for at least five minutes, reconnect to AC outlet and then turn power on.
(Brightness---Center Color---Center Tint --- Center Contrast---Approx 70%)



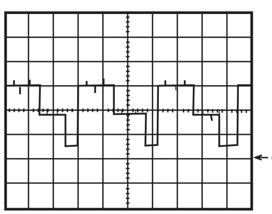
WF1 1DIV: 0.5V 20µs
IC1001 Pin 1



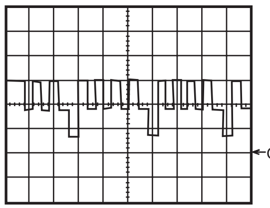
WF2 1DIV: 0.5V 20µs
IC1201 Pin 14



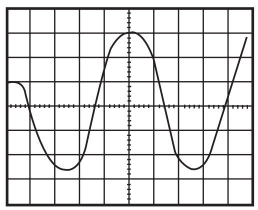
WF3 1DIV: 2V 20µs
Q521 Base



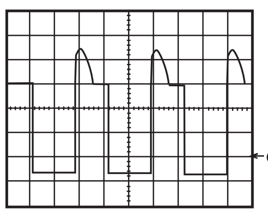
WF4 1DIV: 2V 20µs
Q511 Base



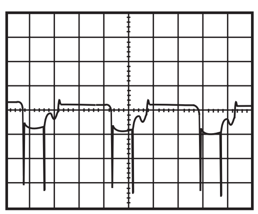
WF5 1DIV: 2V 20µs
Q531 Base



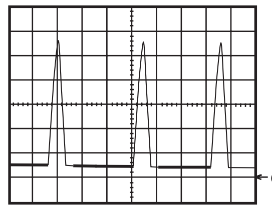
WF6 1DIV: 0.2V 20ms
IC1001 Pin 9



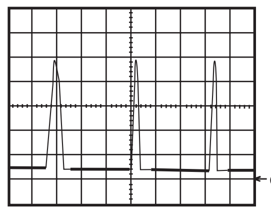
WF7 1DIV: 10V 20µs
Q1572 Collector



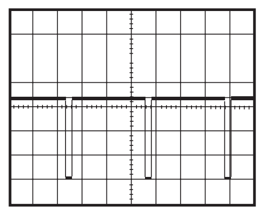
WF8 1DIV: 5V 20µs
Q1571 Base



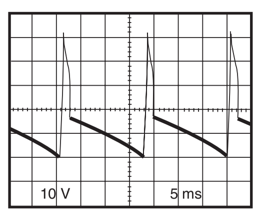
WF9 1DIV: 200V 20µs
CN1571 Pin 1



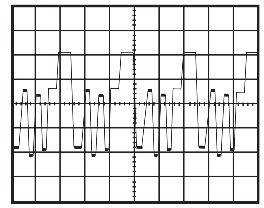
WF10 1DIV: 5V 20µs
CL501B Pin 1



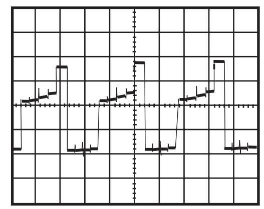
WF11 1DIV: 2V 5ms
IC1551 Pin 7



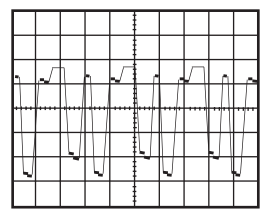
WF12 1DIV: 10V 5ms
CN1571 Pin 4



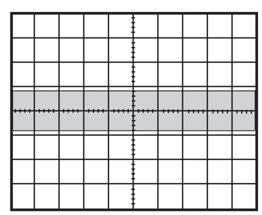
WF13 1DIV: 20V 20µs
Q531 Collector



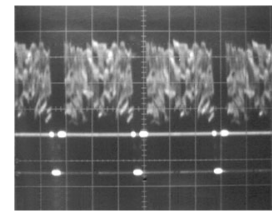
WF14 1DIV: 20V 20µs
Q511 Collector



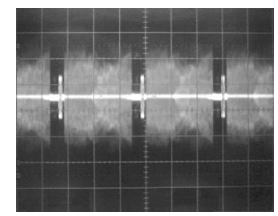
WF15 1DIV: 20V 20µs
Q521 Collector



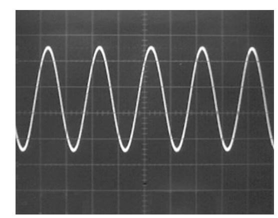
WF16 1DIV: 0.2V 20µs
TU1001 Pin 8



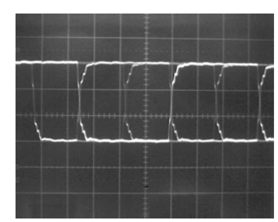
WF17 1DIV: 0.2V 20µs
CL002 Pin 1



WF18 1DIV: 0.2V 20µs
CL002 Pin 3

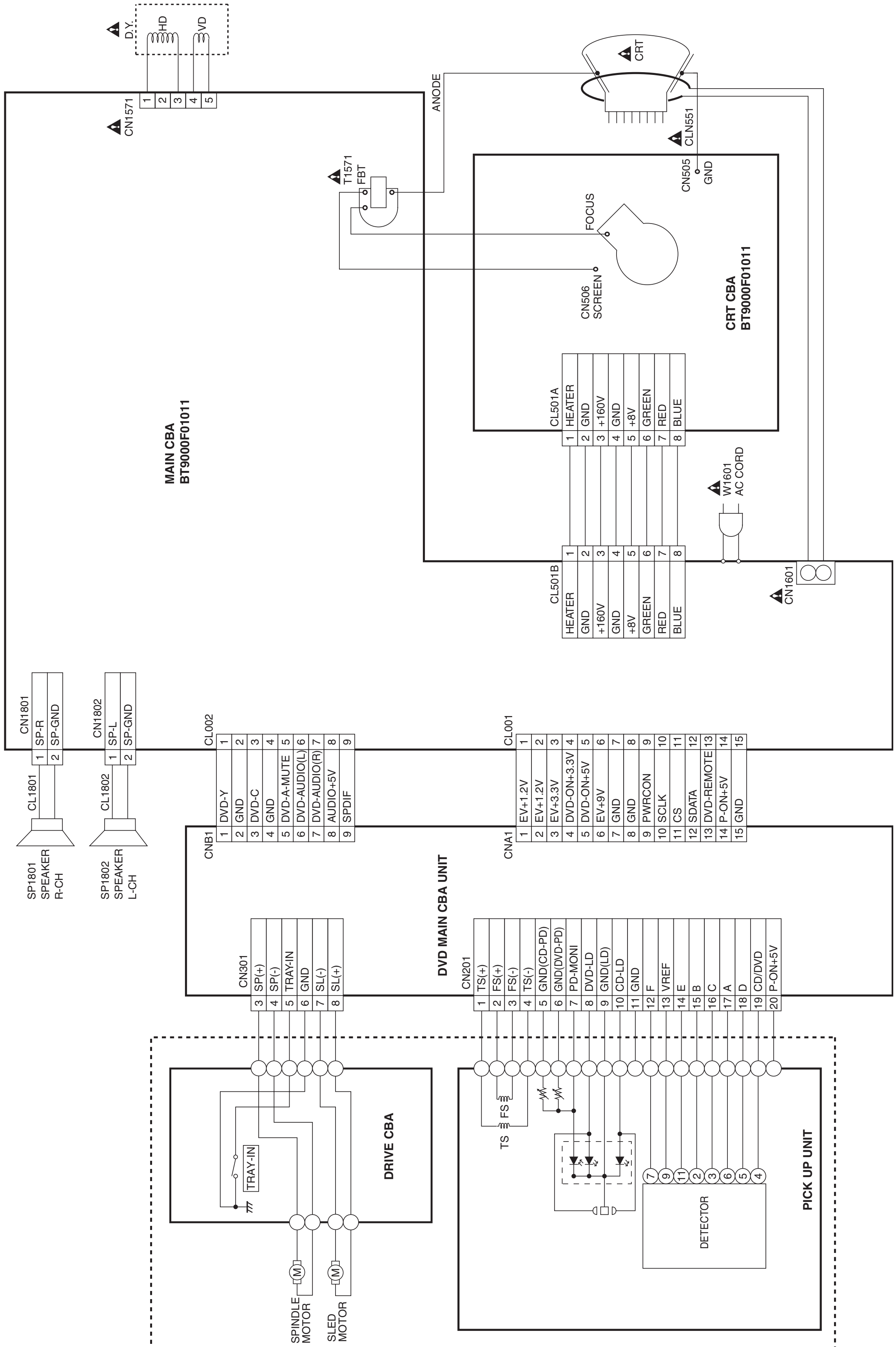


WF19 1DIV: 1V 0.5ms
CL002 Pin 6



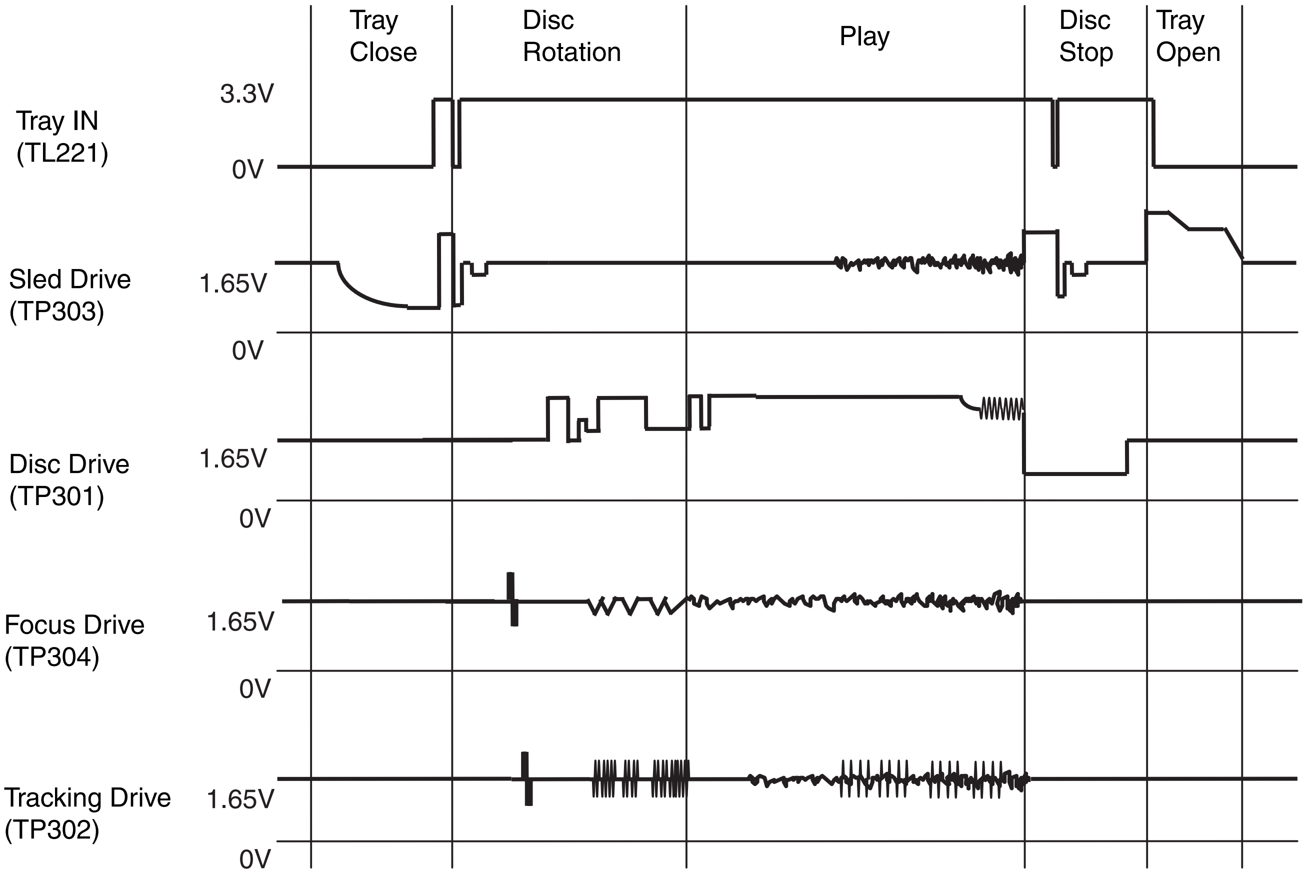
WF20 1DIV: 1V 0.1µs
CL002 Pin 9

WIRING DIAGRAM



SYSTEM CONTROL TIMING CHARTS

Tray Close ~ Play / Play ~ Tray Open



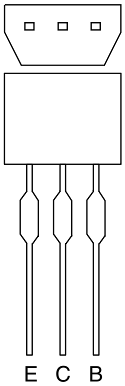
IC PIN FUNCTIONS

IC1201 (TV Micro Controller)

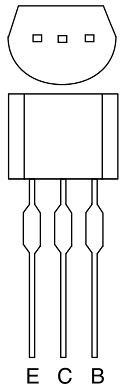
Pin No.	Signal Name	Function
1	GND	GND
2	N.U.	Not Used
3	N.U.	Not Used
4	TEST1	TEST 1
5	GND	GND
6	VCC	AL+5V
7	TEST 0	TEST 0
8	FILT	FILT
9	HLF	Filter for CCD
10	VHOLD	VHOLD
11	CVIN	Input for Video Signal
12	RESET	RESET
13	N.U.	Not Used
14	VIDEO LINE OUT	Composite Signal Output
15	GND	GND
16	3.58 X'TAL	3.58MHz Crystal
17	C-APC	CHROMINANCE APC
18	5.7V REG OUT	5.7V Output
19	AUX2(R)IN	AUX Audio R Input
20	N.U.	Not Used
21	AUX2(L)IN	AUX Audio L Input
22	VCC	VCC
23	GND	GND
24	CVBS IN2	Composite Signal Input 2 (LINE)
25	AUX1(L)IN	DVD Audio L Input
26	CVBS IN1	Composite Signal Input 1 (TUNER)
27	AU MONO IN	Audio Input (TUNER)
28	5.7V REG OUT	5.7V Output
29	C IN	DVD Chrominance Signal
30	Y IN	DVD Luminance Signal
31	V REG VCC	DC 8.7V Input
32	FSC OUT	Clock Output 3.58MHz
33	N.U.	Not Used
34	AUDIO ATT OUT(L)	Audio Output L
35	AUDIO ATT FILTER	Audio Filter
36	AUX1(R)IN	DVD Audio Input R
37	V RAMP F/B	V Ramp Feed Back
38	V RAMP OUT	Vertical Output
39	V RAMP CAP	V Ramp OSC Capacitor
40	8.7V REG OUT	8.7V Output
41	AUDIO ATT OUT(R)	Audio Output R
42	H VCO F/B	H Vco Feed Back
43	AFC FILT	Horizontal AFC Filter
44	GND	GND
45	FBP IN	Flyback Pulse Input
46	H-OUT	H Pulse Output
47	VCC	Vcc
48	VCC	Vcc
49	VCC	Vcc
50	R OUT	Red Output
51	G OUT	Green Output
52	B OUT	Blue Output
53	ACL	IB-Input
54	N.U.	Not Used
55	N.U.	Not Used
56	SDA	I2C-BUS Controller Interface (Data
57	I2C-OPEN	White Balance Adjustment Judgement
58	SCL	I2C-BUS Controller Interface (Clock)
59	CS	DVD Interface Chip Select
60	SDATA	DVD Interface Data
61	SCLK	DVD Interface Clock
62	N.U.	Not Used
63	N.U.	Not Used
64	REMOTE-OUT	DVD Control Key Code Output
65	DVD-A-MUTE	DVD Mute Signal Input

Pin No.	Signal Name	Function
66	KEY-0	Key Input 0
67	KEY-1	Key Input 1
68	N.U.	Not Used
69	AFT	AFT Voltage Input
70	REMOTE	Input for Remote Control
71	N.U.	Not Used
72	SPOT-KILL	Spot Countermeasure
73	P-SAFETY 1	Power Supply Protection
74	P-SAFETY 2	Power Supply Protection
75	P-SAFETY 3	Power Supply Protection
76	EXT-L	Switching External Input
77	DVD-MAIN-POWER	Power On Signal to High for DVD
78	P-ON-H	Output for P-ON-H
79	SP-MUTE	Audio Mute Signal
80	ACL-CONT	ACL Control Signal

LEAD IDENTIFICATIONS

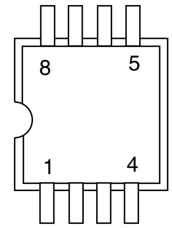


2SC2785(F,H,J)
2SC3400
BA1F4M-T
BN1F4M-T
KRA103M
KRC103M
KTA1266(GR)
KTC3199(GR)
KTC3203(Y)

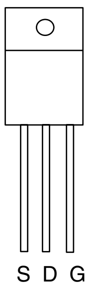


2SA1015-GR(TPE2)
2SA1175(F)
2SA950(O,Y)
2SC1627Y-TPE2
2SC1815-GR(TPE2)
2SC2120-O-TPE2
2SC2120-Y(TPE2)
2SC2482 TPE6
2SD400(E,F)
KTA1267(GR)
KTA1271(Y)
KTC3198(GR)

BR24C02F-W
BR24L02F-WE2
CAT24WC02JI
M24C02-WMN6

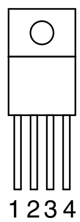


2SK3563

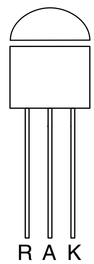


S: Souce
D: Drain
G: Gate

LA78040A



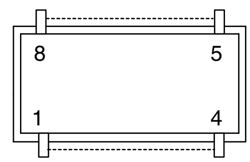
KIA431-AT



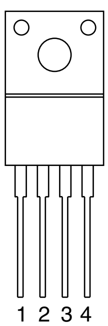
LTV-817B-F
LTV-817C-F
PC817X6



AN17811A

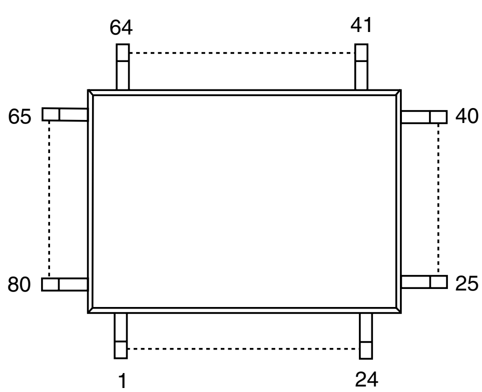


PQ070XF01SZ

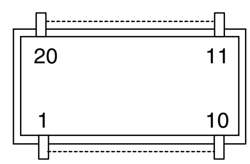


1: Vin
2: Vo
3: GND
4: Vc

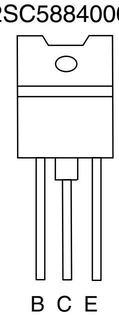
M61273M8-062FP



M61113FP



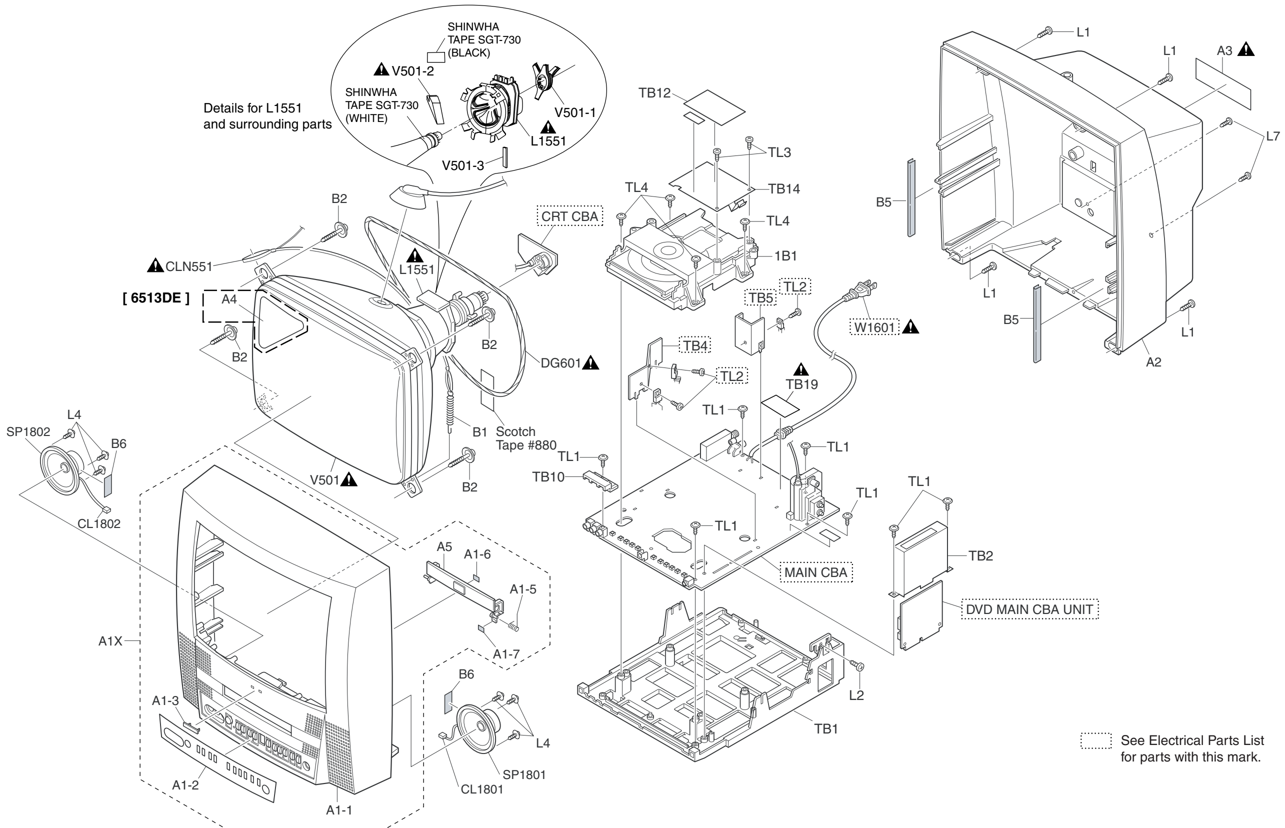
TT2138LS-YB11
T2SC5884000RF



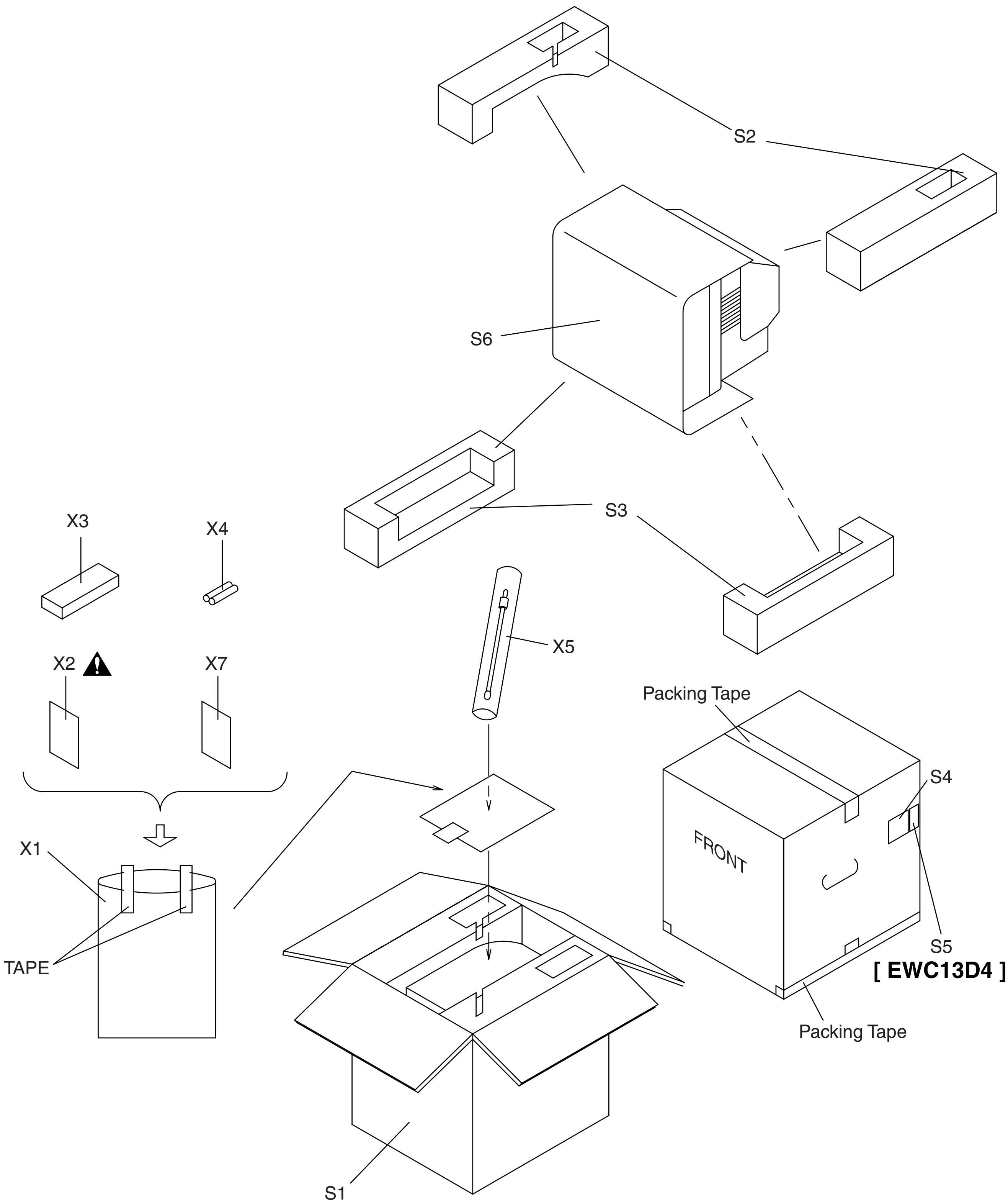
Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
S: Source
G: Gate
D: Drain

EXPLODED VIEWS

Cabinet



Packing


S2
S6
S3
X3
X4
X5
X2
X7
Packing Tape
S4
FRONT
X1
TAPE
S5
[EWC13D4]
Packing Tape
S1

MECHANICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE:
Parts that are not assigned part numbers (---------) are not available.

Comparison Chart of Models and Marks

Model	Mark
6513DE	A
EWC13D4	B
MSD513E	C

Ref. No.	Mark	Description	Part No.
A1X	A	FRONT CABINET ASSEMBLY T8001UB	0ESA06308
A1X	B	FRONT CABINET ASSEMBLY T8002UC	0ESA06309
A1X	C	FRONT CABINET ASSEMBLY T8008UJ	0ESA06334
A1-1	A	FRONT CABINET T8001UB	0EM000941
A1-1	B	FRONT CABINET T8002UC	0EM000945
A1-1	C	FRONT CABINET T8008UJ	0EM101479
A1-2	A	CONTROL PLATE T8001UB	0EM201846
A1-2	B	CONTROL PLATE T8002UC	0EM201847
A1-2	C	CONTROL PLATE T8008UJ	0EM201855
A1-3	A	BRAND BADGE T8001UBSYLVANIA	0EM409012
A1-3	B	BRAND BADGE L0203UDEMERSON	0EM409020
A1-3	C	BRAND BADGE T8008UJMAGNAVOX	0EM409013
A1-5		TRAY SPRING TD707UH	0EM408552
A1-6		CLOTH(B) L5201U0:15X10X1.0T	0EM400076
A1-7		CLOTH(4X7X0.3T) TD250UA	0EM407578
A2		REAR CABINET T8001UB	0EM000942
A3⚠	A	RATING LABEL T8001UB	----------
A3⚠	B	RATING LABEL T8002UC	----------
A3⚠	C	RATING LABEL T8008UJ	----------
A4	A	POP LABEL TD701UB	----------
A5	A	TRAY PANEL T8001UB	0EM302100
A5	B	TRAY PANEL T8002UC	0EM302101
A5	C	TRAY PANEL T8008UJ	0EM409202
1B1		DVD MECHA(S-COMBO) 0838 VCZL0500	N79U0HVM
B1		SPRING TENSION B0080B0:EM40808	26WH006
B2		M5 CRT SCREW(B) B4000UA	0VM403923
B5		CLOTH 190X15XT0.5	TS7623
B6		CLOTH(10X30XT0.5) B5900UA	0EM404486
CL1801		WIRE ASSEMBLY SPEAKER WIRE(180MM)	WX1L9800-001
CL1802		WIRE ASSEMBLY SPEAKER WIRE(180MM)	WX1L9800-001
CLN551⚠		CRT GND WIRE CRT GND	WX1L7720-001
DG601⚠		DEGAUSSING COIL F-019	LLBH00ZTM019
L1		SCREW, P-TIGHT 4X18 BIND HEAD +	GBMP4180
L2		SCREW TAPPING M4X14	DBU14140
L4		SCREW, ASSEMBLED 12:M3X12	0EM406746
L7		SCREW, P-TIGHT 3X10 BIND HEAD+	GBKP3100
SP1801		SPEAKER S08F02B or	DSD0808XQ010
		SPEAKER J-F097-C5	DSD0808DCP01

Ref. No.	Mark	Description	Part No.
SP1802		SPEAKER S08F02B or	DSD0808XQ010
		SPEAKER J-F097-C5	DSD0808DCP01
TB1		TRAY CHASSIS T9000UA	0EM000877
TB2		X5 SHIELD BOX T8020UA	0EM302034
TB10		RCA HOLDER T9000UA	0EM409058
TB12		LABEL, LASER CAUTION (C) TD100UA	---------
TB14		X5 LODER COVER T8020UA	0EM408820
TB19⚠		13V CHASSIS NO.LABEL TJ T8001UB	---------
TL1		SCREW, P-TIGHT 3X12 WASHER HEAD+	GCMP3120
TL3		P-TIGHT SCREW 3X8 BIND +	GBMP3080
TL4		SCREW, P-TIGHT 3X16 BIND HEAD +	GBMP3160
		PACKING	
S1	A	CARTON T8001UB	0EM302089
S1	B	CARTON T8002UC	0EM302107
S1	C	CARTON T8008UJ	0EM409200
S2		STYROFOAM TOP T8001UB	0EM000943
S3		STYROFOAM BOTTOM T8001UB	0EM000944
S4		SERIAL NO. LABEL L9750UA	---------
S5	B	LABEL, EAS(H3761UD) MAKER NO.ZLLFNSLE1	---------
S6		SET SHEET B5506UG:800X1500	0EM402369
		ACCESSORIES	
X1		BAG POLYETHYLENE 235X365XT0.03	0EM408420
X2⚠	A	OWNER'S MANUAL T8001UB	0EMN02410
X2⚠	B	OWNER'S MANUAL T8002UC	0EMN02495
X2⚠	C	OWNER'S MANUAL T8008UJ	0EMN02501
X3	A	REMOTE CONTROL 144/ECNX501/ NE220UD	NE220UD
X3	B	REMOTE CONTROL 144/ECNX501/ NE221UD	NE221UD
X3	C	REMOTE CONTROL 144/ECNX501/ NE224UD	NE224UD
X4		DRY BATTERY R6P UM3 or	XB0M451GH001
		DRY BATTERY R6P(AR)2PX or	XB0M451HU002
		DRY BATTERY R6P(AR)2P X ICI or	XB0M451HU003
		DRY BATTERY(SUNRISE) R6SSE/2S or	XB0M451MS002
		DRY BATTERY R6P/2S	XB0M451T0001
X5		ROD ANTENNA T5200UA or	0EMN01755
		ROD ANTENNA L7720UA:NTSC W/COO or	0EMN00673
		ROD ANTENNA T5000UA	0EMN01599
X7	A	SHEET RETURN STOP L6101UB	0EM407077
X7	B	SHEET RETURN STOP T4259UK	0EM406203A
X7	C	SHEET RETURN STOP T9008UJ	0EM409170

Note:
1. V501 (CRT) HAS COUPLE OF SUBSTITUTIONAL PARTS AND EACH PARTS ALSO HAS MATCHING COMBINATION WITH L1551.
PLEASE SEE TABLE 1 FOR DETAILS OF MATCHING COMBINATION.
2. L1551 (DEFLECTION YOKE) HAS MATCHING COMBINATION WITH V501.
PLEASE SEE TABLE 1 FOR DETAILS OF MATCHING COMBINATION.

Ref. No.	Mark	Description	Part No.
		CRT TYPE A	
L1551⚠		DEFLECTION YOKE LLBY00ZSY005 or	LLBY00ZSY005
⚠		DEFLECTION YOKE KDY3GDA82X	LLBY00ZMS011
V501⚠		CRT A34AGT13X	TCRT190CP036
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2⚠		WEDGE FT-00110W or	XV10000T4001
⚠		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
		CRT TYPE B	
L1551⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002
⚠		DEFLECTION YOKE KDY3GCE83X	LLBY00ZMS027

Ref. No.	Mark	Description	Part No.
V501⚠		CRT A34JQQ093X	TCRT190MS010
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2⚠		WEDGE FT-00110W or	XV10000T4001
⚠		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
		CRT TYPE C	
L1551⚠		DEFLECTION YOKE KDY3GCE83X or	LLBY00ZMS027
⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002
⚠		DEFLECTION YOKE CDY-M1456S or	LLBY00ZQS008
⚠		DEFLECTION YOKE DSE1493FU(S)	LLBY00ZSM008
V501⚠		CRT A34KQW42X	TCRT190SM013
V501-1		C.P.MAGNET JH225-014 or	XM04000BV009
		CPM E-225-F01	XM04000ETC01
V501-2⚠		WEDGE FT-00110W or	XV10000T4001
⚠		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
		CRT TYPE D	
L1551⚠		DEFLECTION YOKE CDY-M1422F	LLBY00ZQS001
V501⚠		CRT A34JLL90X(W)	TCRT190QS015
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2⚠		WEDGE FT-00110W or	XV10000T4001
⚠		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
		CRT TYPE E	
L1551⚠		DEFLECTION YOKE CDY-M1455F or	LLBY00ZQS007
⚠		DEFLECTION YOKE LLBY00ZSY003 or	LLBY00ZSY003
⚠		DEFLECTION YOKE KDY3GD592X	LLBY00ZMS004
V501⚠		CRT A34LRQ90X(VW)	TCRT190P7003
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2⚠		WEDGE FT-00110W or	XV10000T4001
⚠		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
		CRT TYPE F	
L1551⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002
⚠		DEFLECTION YOKE KDY3GCE83X or	LLBY00ZMS027
⚠		DEFLECTION YOKE CDY-M1456S	LLBY00ZQS008
V501⚠		CRT A34KPU02XX	TCRT190GS016
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2⚠		WEDGE FT-00110W or	XV10000T4001
⚠		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
		CRT TYPE G	
L1551⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002
⚠		DEFLECTION YOKE KDY3GCE83X or	LLBY00ZMS027
⚠		DEFLECTION YOKE CDY-M1456S	LLBY00ZQS008
V501⚠		CRT A34JXV70X	TCRT190THA02
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2⚠		WEDGE FT-00110W or	XV10000T4001
⚠		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001

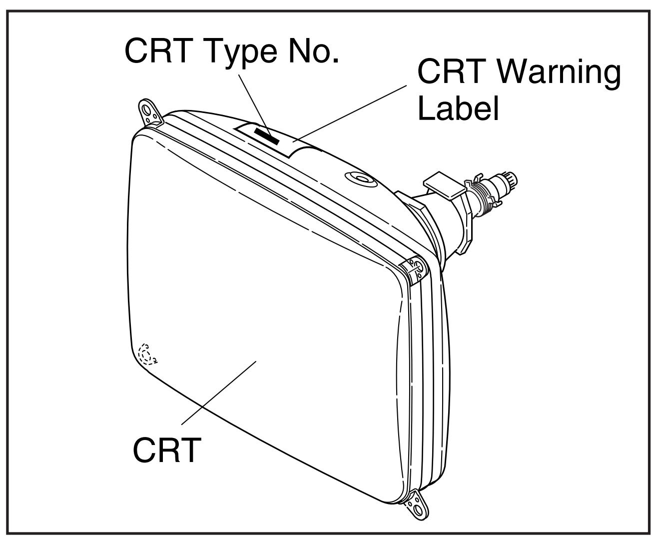
Table 1 (V501 and L1551 Combination)

Note 1: Purity and Convergence Adjustments must be performed following CRT replacement. Refer to Electrical Adjustment Instructions.

Note 2: Please confirm CRT Type No. on the CRT Warning Label which is located on the CRT. Then See the Table 1 for V501 and L1551 combination chart.
Please refer this CRT, Deflection Yoke combination chart for parts order.

V501: CRT Type No.	V501: CRT Part No.	L1551: Deflection Yoke Part No.
A34AGT13X	TCRT190CP036	LLBY00ZSY005
		LLBY00ZMS011
A34JQQ093X	TCRT190MS010	LLBY00ZSY002
		LLBY00ZMS027
A34KQW42X	TCRT190SM013	LLBY00ZMS027
		LLBY00ZSY002
		LLBY00ZQS008
		LLBY00ZSM008
A34JLL90X(W)	TCRT190QS015	LLBY00ZQS001
A34LRQ90X(VW)	TCRT190P7003	LLBY00ZQS007
		LLBY00ZSY003
		LLBY00ZMS004
A34KPU02XX	TCRT190GS016	LLBY00ZSY002
		LLBY00ZMS027
		LLBY00ZQS008
A34JXV70X	TCRT190THA02	LLBY00ZSY002
		LLBY00ZMS027
		LLBY00ZQS008

CRT Warning Label Location



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTES:

1. Parts that are not assigned part numbers (---------) are not available.
2. Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25%	D.....±0.5%	F.....±1%
G.....±2%	J......±5%	K.....±10%
M.....±20%	N.....±30%	Z.....+80/-20%

DVD MAIN CBA UNIT

Ref. No.	Description	Part No.
	DVD MAIN CBA UNIT	N79U0HUP

MMA CBA

Ref. No.	Description	Part No.
	MMA CBA Consists of the following	0ESA06227
	MAIN CBA CRT CBA	------------- -------------

MAIN CBA

Ref. No.	Description	Part No.
	MAIN CBA Consists of the following	---------
	CAPACITORS	
C1001	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C1002	ELECTROLYTIC CAP. 330µF/6.3V M or	CE0KMASDL331
	ELECTROLYTIC CAP. 330µF/6.3V M	CE0KMASTL331
C1003	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1004	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1005	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C1006	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASDL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASTL100
C1007	CERAMIC CAP.(AX) B K 0.01µF/50V	CCA1JKT0B103
C1008	ELECTROLYTIC CAP. 100µF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100µF/16V M	CE1CMASTL101
C1009	CHIP CERAMIC CAP. F Z 0.022µF/50V	CHD1JZB0F223
C1033	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1036	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C1037	CHIP CERAMIC CAP. F Z 1µF/10V	CHD1AZB0F105
C1039	ELECTROLYTIC CAP. 1µF/50V M H7	CE1JMAVSL1R0
C1042	CHIP CERAMIC CAP. F Z 1µF/10V	CHD1AZB0F105
C1044	CERAMIC CAP.(AX) Y M 0.01µF/16V	CCA1CMT0Y103
C1045	ELECTROLYTIC CAP. 220µF/6.3V M or	CE0KMASDL221
	ELECTROLYTIC CAP. 220µF/6.3V M	CE0KMASTL221
C1046	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1047	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103

Ref. No.	Description	Part No.
C1048	ELECTROLYTIC CAP. 10µF/25V M or	CE1EMASDL100
	ELECTROLYTIC CAP. 10µF/25V M	CE1EMASTL100
C1052	CHIP CERAMIC CAP. B K 0.047µF/50V	CHD1JKB0B473
C1053A	FILM CAP.(P) 0.018µF/50V J or	CMA1JJS00183
	FILM CAP.(P) 0.018µF/50V J	CA1J183MS029
C1054	CERAMIC CAP.(AX) B K 0.01µF/50V	CCA1JKT0B103
C1203	CHIP CERAMIC CAP. F Z 0.01µF/50V	CHD1JZB0F103
C1204	CHIP CERAMIC CAP. B K 0.015µF/50V	CHD1JKB0B153
C1205	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C1206	CHIP CERAMIC CAP. B K 220pF/50V	CHD1JKB0B221
C1207	FILM CAP.(P) 0.001µF/50V J or	CMA1JJS00102
	FILM CAP.(P) 0.001µF/50V J	CA1J102MS029
C1209	CHIP CERAMIC CAP. F Z 0.1µF/25V	CHD1EZB0F104
C1214	CERAMIC CAP.(AX) Y M 0.01µF/16V	CCA1CMT0Y103
C1215	CHIP CERAMIC CAP. F Z 0.01µF/50V	CHD1JZB0F103
C1216	CHIP CERAMIC CAP. F Z 0.01µF/50V	CHD1JZB0F103
C1217	CHIP CERAMIC CAP. F Z 0.01µF/50V	CHD1JZB0F103
C1218	CHIP CERAMIC CAP. F Z 0.1µF/25V	CHD1EZB0F104
C1219	CHIP CERAMIC CAP. B K 220pF/50V	CHD1JKB0B221
C1220	CHIP CERAMIC CAP. B K 220pF/50V	CHD1JKB0B221
C1222	ELECTROLYTIC CAP. 0.1µF/50V M or	CE1JMASDL0R1
	ELECTROLYTIC CAP. 0.1µF/50V M	CE1JMASTL0R1
C1223	ELECTROLYTIC CAP. 10µF/16V M or	CE1CMASDL100
	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASTL100
C1224	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASTL1R0
C1225	ELECTROLYTIC CAP. 47µF/25V M or	CE1EMASDL470
	ELECTROLYTIC CAP. 47µF/25V M	CE1EMASTL470
C1230	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1231	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASDL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASTL101
C1232	ELECTROLYTIC CAP. 4.7µF/25V M or	CE1EMASDL4R7
	ELECTROLYTIC CAP. 4.7µF/25V M	CE1EMASTL4R7
C1233	CHIP CERAMIC CAP. F Z 0.01µF/50V	CHD1JZB0F103
C1261	ELECTROLYTIC CAP. 22µF/16V M or	CE1CMASDL220
	ELECTROLYTIC CAP. 22µF/16V M	CE1CMASTL220
C1301	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
C1302	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1304	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASDL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASTL101
C1305	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1306	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASTL1R0
C1307	ELECTROLYTIC CAP. 2.2µF/50V M or	CE1JMASDL2R2
	ELECTROLYTIC CAP. 2.2µF/50V M	CE1JMASTL2R2
C1308	ELECTROLYTIC CAP. 47µF/25V M or	CE1EMASDL470
	ELECTROLYTIC CAP. 47µF/25V M	CE1EMASTL470
C1309	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASTL1R0
C1310	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASTL1R0
C1311	ELECTROLYTIC CAP. 100µF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100µF/16V M	CE1CMASTL101

Ref. No.	Description	Part No.
C1313	ELECTROLYTIC CAP. 100µF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100µF/16V M	CE1CMASTL101
C1314	CHIP CERAMIC CAP. CH D 10pF/50V	CHD1JDBCH100
C1315	CHIP CERAMIC CAP. F Z 1µF/10V	CHD1AZB0F105
C1316	CHIP CERAMIC CAP. F Z 1µF/10V	CHD1AZB0F105
C1317	TF CAP. 0.47µF/50V J or	CT1J474MS045
	FILM CAP. 0.47µF/50V J	122Z317S
C1318	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1319	ELECTROLYTIC CAP. 2.2µF/50V M or	CE1JMASDL2R2
	ELECTROLYTIC CAP. 2.2µF/50V M	CE1JMASTL2R2
C1320	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1322	ELECTROLYTIC CAP. 470µF/10V M or	CE1AMASDL471
	ELECTROLYTIC CAP. 470µF/10V M	CE1AMASTL471
C1324	ELECTROLYTIC CAP. 470µF/10V M or	CE1AMASDL471
	ELECTROLYTIC CAP. 470µF/10V M	CE1AMASTL471
C1325	CHIP CERAMIC CAP. F Z 0.1µF/25V	CHD1EZB0F104
C1326	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASTL1R0
C1327	CHIP CERAMIC CAP. CH J 33pF/50V	CHD1JJBCH330
C1328	CHIP CERAMIC CAP. CH J 33pF/50V	CHD1JJBCH330
C1329	CERAMIC CAP.(AX) SL J 33pF/50V	CCA1JJTSL330
C1331	ELECTROLYTIC CAP. 47µF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47µF/35V M	CE1GMASTL470
C1335	ELECTROLYTIC CAP. 100µF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100µF/16V M	CE1CMASTL101
C1336	ELECTROLYTIC CAP. 4.7µF/50V M or	CE1JMASDL4R7
	ELECTROLYTIC CAP. 4.7µF/50V M	CE1JMASTL4R7
C1337	ELECTROLYTIC CAP. 4.7µF/50V M or	CE1JMASDL4R7
	ELECTROLYTIC CAP. 4.7µF/50V M	CE1JMASTL4R7
C1348	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASDL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASTL101
C1349	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASTL1R0
C1352	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JKB0B103
C1552	MYLAR CAP. 0.22µF/50V J or	CMA1JJS00224
	FILM CAP.(P) 0.22µF/50V J	CA1J224MS029
C1553	ELECTROLYTIC CAP. 2.2µF/50V M LL or	CE1JMASLL2R2
	ELECTROLYTIC CAP. 2.2µF/50V LL	CE1JMASLH2R2
C1555	ELECTROLYTIC CAP. 47µF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47µF/35V M	CE1GMASTL470
C1556	ELECTROLYTIC CAP. 1000µF/25V M or	CE1EMZPDL102
	ELECTROLYTIC CAP. 1000µF/25V M or	CE1EMZZTL102
	ELECTROLYTIC CAP. 1000µF/25V M	CE1EMZPTL102
C1558	CERAMIC CAP.(AX) B K 0.01µF/50V	CA1J103TU011
C1559	ELECTROLYTIC CAP. 330µF/35V M	CE1GMASDL331
C1560	FILM CAP.(P) 0.047µF/50V J or	CMA1JJS00473
	FILM CAP.(P) 0.047µF/50V J	CA1J473MS029
C1571⚠	P.P. CAP 0.33µF/200V J or	CA2D334VC012
⚠	PP CAP. 0.33µF/250V J	CT2E334MS041
C1574	ELECTROLYTIC CAP. 4.7µF/250V M or	CE2EMASDL4R7
	ELECTROLYTIC CAP. 4.7µF/250V M	CE2EMASTL4R7
C1577	FILM CAP.(P) 0.022µF/50V J or	CMA1JJS00223
	FILM CAP.(P) 0.022µF/50V J	CA1J223MS029
C1578	ELECTROLYTIC CAP. 47µF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47µF/35V M	CE1GMASTL470
C1580⚠	P.P. CAP 0.0082µF/1.6K J or	CA3C822VC011
⚠	PP CAP. 0.0082µF/1.6KV J or	CT3C822MS039
⚠	METALLIZED FILM CAP. 0.0082µF/1.6KV J or	CT3C822F7004
⚠	POLYPROPYLENE FILM CAP. 0.0082µF/1.6KV	CT3C822HJE16
C1584	ELECTROLYTIC CAP. 1µF/160V M or	CE2CMASDL1R0
	ELECTROLYTIC CAP. 1µF/160V M or	CE2CMASTL010
	ELECTROLYTIC CAP. 1µF/160V M	CE2CMASTL1R0
C1591⚠	ELECTROLYTIC CAP. 2.2µF/50V M or	CE1JMASDL2R2
⚠	ELECTROLYTIC CAP. 2.2µF/50V M	CE1JMASTL2R2
C1592⚠	ELECTROLYTIC CAP. 4.7µF/50V M or	CE1JMASDL4R7
⚠	ELECTROLYTIC CAP. 4.7µF/50V M	CE1JMASTL4R7
C1593⚠	ELECTROLYTIC CAP. 2.2µF/50V M or	CE1JMASDL2R2
⚠	ELECTROLYTIC CAP. 2.2µF/50V M	CE1JMASTL2R2
C1594	ELECTROLYTIC CAP. 47µF/160V M W/F or	CE2CMZNDL470
	ELECTROLYTIC CAP. 47µF/160V M W/F or	CE2CMZNTL470
	ELECTROLYTIC CAP. 47µF/160V M W/F	CE2CMZPDL470
C1601⚠	METALLIZED FILM CAP. 0.1µF/250V or	CT2E104MS037
⚠	FILM CAP.(MP) 0.1µF/250V K or	CT2E104DC011
⚠	METALLIZED FILM CAP. 0.1µF/275V K or	CT2E104HJE06
⚠	LINE ACROSS CAP. 0.1U/250V	CT2E104DC015
C1602	CERAMIC CAP. BN 560pF/2KV or	CCD3DKA0B561
	CERAMIC CAP. 560pF/2KV or	CA3D561PAN04
	CERAMIC CAP. RB 560pF/2KV	CA3D561TE006
C1603	CERAMIC CAP. F Z 0.01µF/500V or	CCD2JZP0F103
	CERAMIC CAP. 0.01µF/AC250V or	CCD2EZA0F103
	CERAMIC CAP. E Z 0.01µF/500V	CCD2JZP0E103
C1604	CERAMIC CAP. F Z 0.01µF/500V or	CCD2JZP0F103
	CERAMIC CAP. 0.01µF/AC250V or	CCD2EZA0F103
	CERAMIC CAP. E Z 0.01µF/500V	CCD2JZP0E103
C1607⚠	SAFETY CAP. 4700pF/250V KX	CA2E472MR050
C1609	FILM CAP.(P) 0.068µF/50V J or	CMA1JJS00683
	FILM CAP.(P) 0.068µF/50V J	CA1J683MS029
C1610	ELECTROLYTIC CAP. 470µF/200V or	CA2D471NC013
	ELECTROLYTIC CAP. 470µF/200V M W/F	CA2D471EA029
C1611	FILM CAP.(P) 0.0012µF/50V J or	CMA1JJS00122
	FILM CAP.(P) 0.0012µF/50V J	CA1J122MS029
C1612	FILM CAP.(P) 0.068µF/50V J or	CMA1JJS00683
	FILM CAP.(P) 0.068µF/50V J	CA1J683MS029
C1615	CERAMIC CAP. BN 680pF/2KV or	CCD3DKA0B681
	CERAMIC CAP. 680pF/2KV or	CA3D681PAN04
	CERAMIC CAP. RB 680pF/2KV	CA3D681TE006
C1616	ELECTROLYTIC CAP. 100µF/160V M or	CE2CMZPDL101
	ELECTROLYTIC CAP. 100µF/160V M or	CE2CMZPTL101
	ELECTROLYTIC CAP. 100µF/160V M W/F	CE2CMZNTL101
C1617⚠	ELECTROLYTIC CAP. 470µF/35V M or	CE1GMZPDL471
⚠	ELECTROLYTIC CAP. 470µF/35V M(VR)	CE1GMZNTL471
C1619	ELECTROLYTIC CAP. 470µF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470µF/16V M	CE1CMASTL471
C1621	CERAMIC CAP. B K 1000pF/100V	CCD2AKS0B102
C1623	FILM CAP.(P) 0.01µF/50V J or	CMA1JJS00103
	FILM CAP.(P) 0.01µF/50V J	CA1J103MS029
C1625	ELECTROLYTIC CAP. 1000µF/10V M or	CE1AMASDL102
	ELECTROLYTIC CAP. 1000µF/10V M	CE1AMASTL102
C1626	ELECTROLYTIC CAP. 10µF/16V M or	CE1CMASDL100
	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASTL100
C1627	CERAMIC CAP. B K 2200pF/100V	CCD2AKS0B222
C1630	FILM CAP.(P) 0.0056µF/50V J or	CMA1JJS00562
	FILM CAP.(P) 0.0056µF/50V J	CA1J562MS029
C1634	ELECTROLYTIC CAP. 470µF/6.3V M or	CE0KMASDL471
	ELECTROLYTIC CAP. 470µF/6.3V M	CE0KMASTL471
C1637	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASDL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASTL101
C1639	ELECTROLYTIC CAP. 47µF/25V M or	CE1EMASDL470
	ELECTROLYTIC CAP. 47µF/25V M	CE1EMASTL470
C1640	ELECTROLYTIC CAP. 1000µF/16V M or	CE1CMZPDL102

Ref. No.	Description	Part No.
	ELECTROLYTIC CAP. 1000μF/16V M(VR/HC)	CE1CMZNTL102
C1642	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C1650	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1μF/50V M	CE1JMASTL1R0
C1654	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C1656	ELECTROLYTIC CAP. 1000μF/6.3V M or	CE0KMASDL102
	ELECTROLYTIC CAP. 1000μF/6.3V M	CE0KMASTL102
C1662	ELECTROLYTIC CAP. 470μF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASTL471
C1663	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C1664	ELECTROLYTIC CAP. 220μF/6.3V M or	CE0KMASDL221
	ELECTROLYTIC CAP. 220μF/6.3V M	CE0KMASTL221
C1666	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JKB0B222
C1669	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C1670	ELECTROLYTIC CAP. 470μF/6.3V M or	CE0KMASDL471
	ELECTROLYTIC CAP. 470μF/6.3V M	CE0KMASTL471
C1672	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C1702	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1μF/50V M	CE1JMASTL1R0
C1704	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1μF/50V M	CE1JMASTL1R0
C1735	ELECTROLYTIC CAP. 47μF/16V M or	CE1CMASDL470
	ELECTROLYTIC CAP. 47μF/16V M	CE1CMASTL470
C1741	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
C1746	ELECTROLYTIC CAP. 470μF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASTL471
C1748	ELECTROLYTIC CAP. 2.2μF/50V M or	CE1JMASDL2R2
	ELECTROLYTIC CAP. 2.2μF/50V M	CE1JMASTL2R2
C1749	ELECTROLYTIC CAP. 2.2μF/50V M or	CE1JMASDL2R2
	ELECTROLYTIC CAP. 2.2μF/50V M	CE1JMASTL2R2
C1758	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C1801	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C1802	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C1803	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C1804	ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
	ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
C1805	ELECTROLYTIC CAP. 470μF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASTL471
C1806	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C1807	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C1808	ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
	ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
C1809	ELECTROLYTIC CAP. 470μF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASTL471
C1810	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C1811	ELECTROLYTIC CAP. 47μF/25V M or	CE1EMASDL470
	ELECTROLYTIC CAP. 47μF/25V M	CE1EMASTL470
C1812	ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
	ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
	CONNECTORS	
CN1571⚠	CONNECTOR BASE, 5P TV-50P-05-V3 or	J3TVC05TG002
⚠	CONNECTOR BASE, 5P RTB-1.5-5P	J3RTC05JG001
CN1601⚠	CONNECTOR BASE, 2P TV-50P-02-V3 or	J3TVC02TG002
⚠	CONNECTOR BASE, 2P RTB-1.5-2P	J3RTC02JG001
CN1801	STRAIGHT CONNECTOR BASE 00 8283 0212 00 000 or	J383C02UG002
	STRAIGHT PIN HEADER, 2P 173981-2	1770258
CN1802	STRAIGHT CONNECTOR BASE 00 8283 0212 00 000 or	J383C02UG002
	STRAIGHT PIN HEADER, 2P 173981-2	1770258
	DIODES	
D1001	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1002	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1031	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1201	ZENER DIODE MTZJT-775.6B or	QDTB0MTZJ5R6
	ZENER DIODE DZ-5.6BSBT265	NDTB0DZ5R6BS
D1202	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D1203	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D1204	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D1205	ZENER DIODE MTZJT-775.6B or	QDTB0MTZJ5R6
	ZENER DIODE DZ-5.6BSBT265	NDTB0DZ5R6BS
D1225	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D1226	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D1302	ZENER DIODE MTZJT-779.1B or	QDTB0MTZJ9R1
	ZENER DIODE DZ-9.1BSBT265	NDTB0DZ9R1BS
D1303	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1307	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1309⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1311	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1312	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1313	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1315	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1316	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1317	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1318	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1320	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1321	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1552	DIODE 1N5397-B or	NDLZ001N5397
	RECTIFIER DIODE ERA15-02	AERA1502****
D1571	DIODE FR154 or	NDLZ000FR154
	FAST RECOVERY DIODE ERB44-02	QDPZ0ERB4402
D1572⚠	DIODE FR104-B	NDLZ000FR104
D1584	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1585	ZENER DIODE MTZJT-775.1B or	QDTB0MTZJ5R1
	ZENER DIODE DZ-5.1BSBT265	NDTB0DZ5R1BS
D1591⚠	ZENER DIODE MTZJT-7736B or	QDTB00MTZJ36
⚠	ZENER DIODE DZ-36BSBT265	NDTB00DZ36BS

Ref. No.	Description	Part No.
D1595⚠	ZENER DIODE MTZJT-7720C or	QDTC00MTZJ20
⚠	ZENER DIODE DZ-20BSCT265	NDTC00DZ20BS
D1596⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1597⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1598⚠	DIODE FR104-B	NDLZ000FR104
D1601	PCB JUMPER D0.6-P10.0	JW10.0T
D1603	DIODE 1N5399-B/P or	NDLZ001N5399
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D1604	DIODE 1N5399-B/P or	NDLZ001N5399
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D1605	DIODE 1N5399-B/P or	NDLZ001N5399
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D1606	DIODE 1N5399-B/P or	NDLZ001N5399
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D1607	ZENER DIODE MTZJT-7720C or	QDTC00MTZJ20
	ZENER DIODE DZ-20BSCT265	NDTC00DZ20BS
D1608	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1609	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1610	ZENER DIODE MTZJT-775.6B or	QDTB0MTZJ5R6
	ZENER DIODE DZ-5.6BSBT265	NDTB0DZ5R6BS
D1613	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1614	ZENER DIODE MTZJT-7736A or	QDTA00MTZJ36
	ZENER DIODE DZ-36BSAT265	NDTA00DZ36BS
D1616	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1617	DIODE FR154 or	NDLZ000FR154
	FAST RECOVERY DIODE ERB44-02	QDPZ0ERB4402
D1618	RECTIFIER DIODE 15DF4 or	QDQZ00015DF4
	RECOVERY DIODE ERC18-04	QDZZ0ERC1804
D1619⚠	DIODE FR104-B	NDLZ000FR104
D1620	ZENER DIODE MTZJT-777.5B or	QDTB0MTZJ7R5
	ZENER DIODE DZ-7.5BSBT265	NDTB0DZ7R5BS
D1621	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1623	DIODE FR154 or	NDLZ000FR154
	FAST RECOVERY DIODE ERB44-02	QDPZ0ERB4402
D1625	SCHOTTKY BARRIER DIODE 21DQ04 or	QDQZ0021DQ04
	SCHOTTKY BARRIER DIODE ERB81-004	AERB81004***
D1626	ZENER DIODE MTZJT-7736A or	QDTA00MTZJ36
	ZENER DIODE DZ-36BSAT265	NDTA00DZ36BS
D1627	SCHOTTKY BARRIER DIODE 21DQ04 or	QDQZ0021DQ04
	SCHOTTKY BARRIER DIODE ERB81-004	AERB81004***
D1628	PCB JUMPER D0.6-P5.0	JW5.0T
D1629	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1632	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1633	ZENER DIODE MTZJT-7716B or	QDTB00MTZJ16
	ZENER DIODE DZ-16BSBT265	NDTB00DZ16BS
D1637⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1639	PCB JUMPER D0.6-P10.0	JW10.0T
D1640	DIODE 1ZC33 or	QDQZ0001ZC33
	ZENER DIODE RD33FB	QDQZ000RD33F
D1641	ZENER DIODE MTZJT-775.6C or	QDTC0MTZJ5R6
	ZENER DIODE DZ-5.6BSCT265	NDTC0DZ5R6BS

Ref. No.	Description	Part No.
D1650⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1652⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1653⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1659	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1660	PCB JUMPER D0.6-P5.0	JW5.0T
D1662	RECTIFIER DIODE ERA15-02	AERA1502****
D1731	INDUCTOR 10µH-J-26T or	LLAXJATTU100
	INDUCTOR 10µH-K-26T	LLAXKDTKA100
D1736	ZENER DIODE MTZJT-775.1B or	QDTB0MTZJ5R1
	ZENER DIODE DZ-5.1BSBT265	NDTB0DZ5R1BS
D1801⚠	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
⚠	SWITCHING DIODE 1N4148	NDTZ001N4148
D1802	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1803	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D1804	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
	ICS	
IC1001	IC:VIF/SIF M61113FP	QSZBA0SHT019
IC1201⚠	MICRO COMPUTER+VCD M61273M8-062FP	QSZAA0RHT012
IC1202	IC:MEMORY BR24C02F-W or	QSMBA0SRM003
	IC:EEPROM CAT24WC02JI or	NSZBA0SBG001
	IC(EEP-ROM) M24C02-WMN6 or	NSZAA0SSS004
	IC BR24L02F-WE2	QSZBA0TRM068
IC1551⚠	VERTICAL OUTPUT IC LA78040A	QSBBA0SSY003
IC1601⚠	PHOTOCOUPLER LTV-817B-F or	NPEB0LTV817F
⚠	PHOTOCOUPLER LTV-817C-F or	NPEC0LTV817F
⚠	PHOTO COUPLER PC817X6	QPE600PC817X
IC1602	VOLTAGE REGULATOR PQ070XF01SZ	QSZBA0SSH026
IC1603	IC:SHUNT REGULATOR KIA431-AT	NSZLA0TJY001
IC1604	IC:SHUNT REGULATOR KIA431-AT	NSZLA0TJY001
IC1801	AUDIO AMP IC AN17811A	QSZAA0SMS015
IC1802	AUDIO AMP IC AN17811A	QSZAA0SMS015
	COILS	
L1001	PCB JUMPER D0.6-P5.0	JW5.0T
L1031	PCB JUMPER D0.6-P5.0	JW5.0T
L1033	INDUCTOR 15µH-J-26T or	LLAXJATTU150
	INDUCTOR 15µH-K-26T	LLAXKDTKA150
L1041	PCB JUMPER D0.6-P5.0	JW5.0T
L1203	INDUCTOR 22µH-J-26T or	LLAXJATTU220
	INDUCTOR 22µH-K-26T	LLAXKDTKA220
L1204	INDUCTOR 22µH-J-26T or	LLAXJATTU220
	INDUCTOR 22µH-K-26T	LLAXKDTKA220
L1301	INDUCTOR 22µH-K-5FT or	LLARKBSTU220
	INDUCTOR 22µH-K-5FT	LLARKDSKA220
L1302	PCB JUMPER D0.6-P5.0	JW5.0T
L1557	CHOKE COIL 22µH-K or	LLBD00PKV006
	CHOKE COIL 22µH-K	LLBD00PKT002
L1601⚠	LINE FILTER 2.7MH ELF15N013A	LLBG00ZMS037
L1614	INDUCTOR 2.2µH-K-5FT or	LLARKBSTU2R2
	INDUCTOR 2.2µH-K-5FT	LLARKDSKA2R2
L1615	INDUCTOR 22µH-K-5FT or	LLARKBSTU220
	INDUCTOR 22µH-K-5FT	LLARKDSKA220
L1739	INDUCTOR 0.47µH-J-26T or	LLAXJATTUR47
	INDUCTOR 0.47µH-K-26T	LLAXKDTKAR47

Ref. No.	Description	Part No.
L1851	PCB JUMPER D0.6-P5.0	JW5.0T
L1852	INDUCTOR 2.2µH-K-5FT or	LLARKBSTU2R2
	INDUCTOR 2.2µH-K-5FT	LLARKDSKA2R2
L1853	INDUCTOR 2.2µH-K-5FT or	LLARKBSTU2R2
	INDUCTOR 2.2µH-K-5FT	LLARKDSKA2R2
L1854	PCB JUMPER D0.6-P5.0	JW5.0T
L1855	INDUCTOR 2.2µH-K-5FT or	LLARKBSTU2R2
	INDUCTOR 2.2µH-K-5FT	LLARKDSKA2R2
L1856	INDUCTOR 2.2µH-J-26T or	LLAXJATTU2R2
	INDUCTOR 2.2µH-K-26T	LLAXKDTKA2R2
L1857	INDUCTOR 2.2µH-J-26T or	LLAXJATTU2R2
	INDUCTOR 2.2µH-K-26T	LLAXKDTKA2R2
	TRANSISTORS	
Q1285	RES. BUILT-IN TRANSISTOR KRA103M or	NQSZ0KRA103M
	RES. BUILT-IN TRANSISTOR BN1F4M-T	QQSZ00BN1F4M
Q1301	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1303	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q1304	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1571 ⚠	TRANSISTOR TT2138LS-YB11 or	QQZZ00TT2138
⚠	TRANSISTOR 2SC5884000RF	QQZZ02SC5884
Q1572	TRANSISTOR 2SC1627Y-TPE2	QQSY02SC1627
Q1591 ⚠	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
⚠	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
⚠	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
⚠	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
⚠	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
⚠	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1601 ⚠	MOS FET 2SK3563	QFWZ02SK3563
Q1602	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q1604	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1605	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1606 ⚠	TRANSISTOR 2SA950(O) or	Q2SA9500TPE2
⚠	TRANSISTOR 2SA950(Y) or	Q2SA950YTPE2
⚠	TRANSISTOR KTA1271(Y)	NQSY0KTA1271
Q1607	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198

Ref. No.	Description	Part No.
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1608	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1609	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR 2SC3400 or	2SC3400Z
	RES. BUILT-IN TRANSISTOR BA1F4M-T	QQSZ00BA1F4M
Q1610	TRANSISTOR 2SA1175(F) or	QQSF02SA1175
	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KTA1266(GR) or	NQS40KTA1266
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
Q1612	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1613	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q1614	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q1615	TRANSISTOR 2SD400(F) or	QQUF002SD400
	TRANSISTOR 2SD400(E)	QQUE002SD400
Q1616	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q1619	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198(GR) or	NQS40KTC3198
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
	RESISTORS	
R1001	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1002	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1010	CHIP RES.(1608) 1/10W J 200 Ω	RRXAJB5Z0201
R1011	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R1012	CHIP RES.(1608) 1/10W J 150 Ω	RRXAJB5Z0151
R1013	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1015	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1016	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1018	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJB5Z0224
R1019	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJB5Z0224
R1022	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R1037	CHIP RES.(1608) 1/10W J 180 Ω	RRXAJB5Z0181
R1041	CHIP RES.(1608) 1/10W J 56k Ω	RRXAJB5Z0563
R1201	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R1202	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R1203	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R1204	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R1205	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1206	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R1207	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R1208	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R1209	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R1210	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJB5Z0472
R1211	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1213	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1215	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1216	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1220	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJB5Z0104
R1221	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJB5Z0104

Ref. No.	Description	Part No.
R1222	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1223	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJB5Z0104
R1224	CARBON RES. 1/4W J 5.6k Ω	RCX4JATZ0562
R1225	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R1226	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1227	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1228	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1229	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJB5Z0562
R1230	CARBON RES. 1/4W J 5.6k Ω	RCX4JATZ0562
R1231	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R1232	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R1233	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1234	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1235	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJB5Z0682
R1236	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJB5Z0393
R1240	CARBON RES. 1/4W J 1M Ω	RCX4JATZ0105
R1257	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1260	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1293	CARBON RES. 1/4W J 47k Ω	RCX4JATZ0473
R1294	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1301	CHIP RES.(1608) 1/10W J 180k Ω	RRXAJB5Z0184
R1302	CARBON RES. 1/4W J 15k Ω	RCX4JATZ0153
R1303	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R1304	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1305	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1306	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJB5Z0562
R1307	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1308	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1309	CARBON RES. 1/4W J 39k Ω	RCX4JATZ0393
R1311	CHIP RES.(1608) 1/10W J 10M Ω	RRXAJB5Z0106
R1312	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1313	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1314	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1317	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1319	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJB5Z0471
R1320	CHIP RES.(1608) 1/10W J 120k Ω	RRXAJB5Z0124
R1321⚠	CARBON RES. 1/4W J 56 Ω	RCX4JATZ0560
R1322	CARBON RES. 1/4W J 10 Ω	RCX4JATZ0100
R1323	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJB5Z0682
R1324	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1327	CARBON RES. 1/4W J 22 Ω	RCX4JATZ0220
R1328	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R1330	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R1334	CHIP RES.(1608) 1/10W J 330 Ω	RRXAJB5Z0331
R1335	CHIP RES.(1608) 1/10W J 330 Ω	RRXAJB5Z0331
R1336	CHIP RES.(1608) 1/10W J 330 Ω	RRXAJB5Z0331
R1337	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R1338	CARBON RES. 1/4W J 12 Ω	RCX4JATZ0120
R1339⚠	CARBON RES. 1/4W J 1.2 Ω	RCX4JATZ01R2
R1346	CARBON RES. 1/4W J 12k Ω	RCX4JATZ0123
R1347	CARBON RES. 1/4W J 470 Ω	RCX4JATZ0471
R1348	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJB5Z0682
R1349	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJB5Z0682
R1350	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R1351	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R1430	CARBON RES. 1/4W J 3.9k Ω	RCX4JATZ0392
R1544⚠	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R1551	CARBON RES. 1/4W J 330 Ω	RCX4JATZ0331
R1552	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R1556	CARBON RES. 1/4W J 1 Ω	RCX4JATZ01R0
R1557	CARBON RES. 1/4W J 470 Ω	RCX4JATZ0471

Ref. No.	Description	Part No.
R1558	CARBON RES. 1/4W J 22k Ω	RCX4JATZ0223
R1559	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1560	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R1561	CARBON RES. 1/4W J 8.2k Ω	RCX4JATZ0822
R1562	CARBON RES. 1/4W J 10 Ω	RCX4JATZ0100
R1563	CARBON RES. 1/4W J 8.2 Ω	RCX4JATZ08R2
R1564	PCB JUMPER D0.6-P5.0	JW5.0T
R1565⚠	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R1566⚠	PCB JUMPER D0.6-P5.0	JW5.0T
R1567⚠	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R1569	CARBON RES. 1/2W J 68 Ω or	RCX2JZQZ0680
	CARBON RES. 1/2W J 68 Ω	RCX2680KA013
R1570⚠	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R1571	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R1573	CARBON RES. 1/4W J 470 Ω	RCX4JATZ0471
R1574⚠	METAL OXIDE FILM RES. 2W J 1k Ω or	RN02102ZU001
⚠	METAL OXIDE FILM RES. 2W J 1k Ω	RN02102DP004
R1575⚠	METAL OXIDE FILM RES. 2W J 1k Ω or	RN02102ZU001
⚠	METAL OXIDE FILM RES. 2W J 1k Ω	RN02102DP004
R1576	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1577	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R1578⚠	PCB JUMPER D0.6-P5.0	JW5.0T
R1579	CARBON RES. 1/4W J 33 Ω	RCX4JATZ0330
R1580	CARBON RES. 1/4W J 27 Ω	RCX4JATZ0270
R1581	CARBON RES. 1/4W J 27 Ω	RCX4JATZ0270
R1582	CARBON RES. 1/4W J 10 Ω	RCX4JATZ0100
R1583⚠	METAL OXIDE FILM RES. 2W J 1.8 Ω or	RN021R8ZU001
⚠	METAL OXIDE FILM RES. 2W J 1.8 Ω	RN021R8DP004
R1584	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1585	CARBON RES. 1/4W J 10 Ω	RCX4JATZ0100
R1586	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1587	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R1588⚠	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R1589	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1590	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1592⚠	CARBON RES. 1/4W J 180k Ω	RCX4JATZ0184
R1593⚠	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R1594⚠	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R1595	CARBON RES. 1/4W J 15k Ω	RCX4JATZ0153
R1596⚠	CARBON RES. 1/4W J 6.8k Ω	RCX4JATZ0682
R1597	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1598⚠	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R1599⚠	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R1601⚠	CEMENT RES. 3W K 1.2 Ω or	RW031R2PG007
⚠	CEMENT RES. 5W K 1.2 Ω or	RW051R2DP005
⚠	CEMENT RESISTOR 5W K 1.2 Ω or	RW051R2PG001
⚠	CEMENT RESISTOR 5W J 1.2 Ω H:10MM or	RW051R2PAK10
⚠	CEMENT RESISTOR 3W K 1.2 Ω	RW031R2PAK10
R1602	CARBON RES. 1/4W J 220 Ω	RCX4JATZ0221
R1603	CARBON RES. 1/4W J 220 Ω	RCX4JATZ0221
R1604	CARBON RES. 1/4W J 680k Ω	RCX4JATZ0684
R1605	CARBON RES. 1/4W J 680k Ω	RCX4JATZ0684
R1606	CARBON RES. 1/4W J 680k Ω	RCX4JATZ0684
R1607	CARBON RES. 1/4W J 680k Ω	RCX4JATZ0684
R1608	CARBON RES. 1/4W J 180k Ω	RCX4JATZ0184
R1610	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R1611	METAL OXIDE FILM RES. 2W J 0.39 Ω or	RN02R39ZU001
	METAL OXIDE FILM RES. 2W J 0.39 Ω	RN02R39DP004
R1612⚠	METAL OXIDE FILM RES. 2W J 3.9 Ω or	RN023R9ZU001
⚠	METAL OXIDE FILM RES. 2W J 3.9 Ω	RN023R9DP004
R1613	CARBON RES. 1/4W J 120 Ω	RCX4JATZ0121

Ref. No.	Description	Part No.
R1614	CARBON RES. 1/4W J 2.2k Ω	RCX4JATZ0222
R1615	CARBON RES. 1/4W J 33k Ω	RCX4JATZ0333
R1617	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R1620	CARBON RES. 1/4W J 6.8 Ω	RCX4JATZ06R8
R1622	METAL OXIDE FILM RES. 2W J 8.2k Ω or	RN02822ZU001
	METAL OXIDE FILM RES. 2W J 8.2k Ω	RN02822DP004
R1623	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R1624⚠	CARBON RES. 1/4W J 39k Ω	RCX4JATZ0393
R1625⚠	CARBON RES. 1/4W J 39k Ω	RCX4JATZ0393
R1629	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1630	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1631	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1632⚠	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1633⚠	CARBON RES. 1/4W J 5.6k Ω	RCX4JATZ0562
R1634	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJB5Z0682
R1635	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R1636	CARBON RES. 1/4W J 1 Ω	RCX4JATZ01R0
R1638	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R1639	CARBON RES. 1/2W J 1.5k Ω or	RCX2JZQZ0152
	CARBON RES. 1/2W J 1.5k Ω	RCX2152KA013
R1640⚠	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R1641	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1642	CARBON RES. 1/4W J 6.8k Ω	RCX4JATZ0682
R1643⚠	CARBON RES. 1/4W J 33 Ω	RCX4JATZ0330
R1644	CARBON RES. 1/4W J 47k Ω	RCX4JATZ0473
R1645⚠	CARBON RES. 1/4W J 47k Ω	RCX4JATZ0473
R1646	PCB JUMPER D0.6-P5.0	JW5.0T
R1647⚠	CARBON RES. 1/4W J 8.2 Ω	RCX4JATZ08R2
R1648	CARBON RES. 1/4W J 6.8 Ω	RCX4JATZ06R8
R1649⚠	CARBON RES. 1/4W J 22 Ω	RCX4JATZ0220
R1650	PCB JUMPER D0.6-P5.0	JW5.0T
R1651	CARBON RES. 1/4W J 47k Ω	RCX4JATZ0473
R1652	CARBON RES. 1/4W J 220 Ω	RCX4JATZ0221
R1654⚠	CARBON RES. 1/4W J 18 Ω	RCX4JATZ0180
R1655	CARBON RES. 1/4W J 3.9 Ω	RCX4JATZ03R9
R1656	CARBON RES. 1/4W J 22k Ω	RCX4JATZ0223
R1657	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R1658⚠	CARBON RES. 1/4W J 3.9 Ω	RCX4JATZ03R9
R1659⚠	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R1660⚠	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R1661	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R1662	PCB JUMPER D0.6-P12.5	JW12.5T
R1663	CHIP RES. 1/10W F 8.2k Ω or	RRXAFB5Z8201
	CHIP RES.(1608) 1/10W F 8.2k Ω	RRXAFB5H8201
R1664	CHIP RES. 1/10W F 4.7k Ω or	RRXAFB5Z4701
	CHIP RES.(1608) 1/10W F 4.7k Ω	RRXAFB5H4701
R1665	CARBON RES. 1/4W J 1 Ω	RCX4JATZ01R0
R1667	CHIP RES. 1/10W F 220 Ω or	RRXAFB5Z2200
	CHIP RES.(1608) 1/10W F 220 Ω	RRXAFB5H2200
R1669⚠	PCB JUMPER D0.6-P5.0	JW5.0T
R1670	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1671	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R1672	CARBON RES. 1/4W J 2.2k Ω	RCX4JATZ0222
R1673	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R1674	CARBON RES. 1/4W J 22 Ω	RCX4JATZ0220
R1681	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R1682	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R1686⚠	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R1687	CARBON RES. 1/4W G 5.6k Ω	RCX4GATZ0562
R1688	CARBON RES. 1/4W G 15k Ω	RCX4GATZ0153
R1689	CARBON RES. 1/4W G 18k Ω	RCX4GATZ0183

Ref. No.	Description	Part No.
R1690	CARBON RES. 1/4W G 56k Ω	RCX4GATZ0563
R1694	CHIP RES.(1608) 1/10W J 10 Ω	RRXAJB5Z0100
R1695	CARBON RES. 1/4W J 390 Ω	RCX4JATZ0391
R1701	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJB5Z0750
R1702	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJB5Z0183
R1703	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJB5Z0104
R1704	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJB5Z0183
R1706	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJB5Z0104
R1707	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1708	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1752	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1753	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1788	CHIP RES.(1608) 1/16W J 160 Ω	RRXAJB5Z0161
R1789	CHIP RES.(1608) 1/16W J 160 Ω	RRXAJB5Z0161
R1790	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1791	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R1801⚠	CARBON RES. 1/4W J 15k Ω	RCX4JATZ0153
R1802⚠	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1803⚠	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R1804	CARBON RES. 1/4W J 2.2k Ω	RCX4JATZ0222
R1805	CARBON RES. 1/4W J 15k Ω	RCX4JATZ0153
R1806	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1807	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R1808	CARBON RES. 1/4W J 2.2k Ω	RCX4JATZ0222
R1809	METAL OXIDE FILM RES. 1W J 12 Ω or	RN01120ZU001
	METAL OXIDE FILM RES. 1W J 12 Ω	RN01120DP003
R1810	METAL OXIDE FILM RES. 1W J 12 Ω or	RN01120ZU001
	METAL OXIDE FILM RES. 1W J 12 Ω	RN01120DP003
R1851	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R1852	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R1853	CARBON RES. 1/2W J 12 Ω or	RCX2JZQZ0120
	CARBON RES. 1/2W J 12 Ω	RCX2120KA013
	SWITCHES	
SW1201	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1202	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1203	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1204	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1205	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1206	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1207	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02

Ref. No.	Description	Part No.
SW1208	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1209	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1210	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
SW1211	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH SKHHAM or	SST0101AL029
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH TC-1104(H=5.0)	SST0101DNG02
	MISCELLANEOUS	
BC1571	BEAD INDUCTORS FBA04HA600VB-00	LLBF00STU026
BC1601	PCB JUMPER D0.6-P5.0	JW5.0T
BC1602	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC1605	PCB JUMPER D0.6-P5.0	JW5.0T
BC1606	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC1607	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC1650	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC1731	PCB JUMPER D0.6-P5.0	JW5.0T
BC1732	PCB JUMPER D0.6-P5.0	JW5.0T
BC1736	PCB JUMPER D0.6-P5.0	JW5.0T
BC1737	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
CF1031	CERAMIC TRAP 4.5MHz or	FBE455PMR003
	4.5M TRAP XT4.5MB2 or	FBE455PLN001
	CERAMIC TRAP 4.5MHz	FBE455PMS002
CF1032	CERAMIC FILTER SFSRA4M50CF00-B0 or	FBB455PMR004
	4.5M FILTER LTH4.5MCB	FBB455PLN001
F1601⚠	FUSE 4.00A/125V or	PAGU20CAG402
⚠	FUSE 51MS040L or	PAFC20CHV402
⚠	FUSE STC4A125V U/CT or	PAGE20CW3402
⚠	FUSE 4.00A/125V	PAGG20CNG402
FH1601	FUSE HOLDER MSF-015 or	XH01Z00LY001
	FUSE HOLDER FH-V-03078	XH01Z00DK001
FH1602	FUSE HOLDER MSF-015 or	XH01Z00LY001
	FUSE HOLDER FH-V-03078	XH01Z00DK001
JK1701	RCA JACK(YELLOW) MTJ-032-05B-20 or	JXRL010LY038
	RCA JACK 1P:YELLOW DA1-05A3N0S001	JXRL010RP036
JK1702	RCA JACK(RED) MTJ-032-05A-21 or	JYRL010LY010
	RCA JACK 1P:RED(SW) DA1-05A2N1S001	JYRL010RP017
JK1703	RCA JACK(WHITE) MTJ-032-05B-22 or	JXRL010LY039
	RCA JACK 1P : WHITE DA1-05A4N0S001	JXRL010RP037
JK1730	RCA JACK MSP-241V-05 PBSN W/O	JXRL010LY085
JK1801	MINI JACK HSJ2000-01-010 or	JYSL010HD002
	MINI JACK MSJ-2000 or	JYSL010LY003
	PHONE JACK DP3-25-7-001	JYSL010RP002
PS1602⚠	THERMISTOR ZPB45BL7R0A	QNZZ45BL7R0A
RS1201	REMOCON RECEIVE UNIT PIC-37042SR or	USESJRSKK034
	REMOCON RECEIVE UNIT PIC-26042SR-2	USESJRSKK032
SA1601⚠	SURGE ABSORBER JVR-07N471K or	NVQZVR07N471
⚠	SURGE ABSORBER CNR-10D471K or	NVQZR10D471K
⚠	SURGE ABSORBER CNR-07D471K or	NVQZR07D471K
⚠	SURGE ABSORBER PVR-07D471KB	NVQZ07D471KB
SF1001	SAW FILTER SAFHM45M7VAAZ00B03	FBB456PMR010
SG1601⚠	GAP. FNR-G3.10D	FAZ000LD6005
T1571⚠	FLYBACK TRANSFORMER JF0501-3101B or	LTF00CPXB039

Ref. No.	Description	Part No.
⚠	FLYBACK TRANS BSC23-2603S	LTF00CPS2054
T1572	H0RIZONTAL DRIVE TRANS LP2-005	LTH00CPA5005
T1601⚠	SWITCHING TRANS 04727	LTT00CPKT137
TB4	13V H/V HEAT SINK PIU T8001UB	0EM302039
TB5	9V POW HEAT SINK PHC T4400UA	0EM407598
TL2	SCREW, B-TIGHT M3X8 BIND HEAD+	GBMB3080
TP1301	PCB JUMPER D0.6-P10.0	JW10.0T
TP1304	PCB JUMPER D0.6-P5.0	JW5.0T
TP1305	PCB JUMPER D0.6-P5.0	JW5.0T
TP1401	PCB JUMPER D0.6-P10.0	JW10.0T
TP1402	PCB JUMPER D0.6-P10.0	JW10.0T
TP1403	PCB JUMPER D0.6-P7.5	JW7.5T
TP1404	PCB JUMPER D0.6-P7.5	JW7.5T
TP1405	PCB JUMPER D0.6-P7.5	JW7.5T
TP1501	PCB JUMPER D0.6-P5.0	JW5.0T
TP1502	PCB JUMPER D0.6-P5.0	JW5.0T
TP1503	PCB JUMPER D0.6-P5.0	JW5.0T
TP1731	PCB JUMPER D0.6-P12.5	JW12.5T
TP1732	PCB JUMPER D0.6-P7.5	JW7.5T
TP1733	PCB JUMPER D0.6-P7.5	JW7.5T
TP1734	PCB JUMPER D0.6-P7.5	JW7.5T
TU1001	TUNER B9015AF or	UTUNNTUSP025
	TUNER ENV56K02G3 or	UTUNNTUMS012
	TUNER UNIT TEQH9-001A	UTUNNTUAL032
VR1601	CARBON P.O.T. 10k Ω B	VRCB103HH014
W1601⚠	AC CORD PB8K9F9110A-057 or	WAC0172LW008
⚠	AC CORD WAC0172LTE01 or	WAC0172LTE01
⚠	AC CORD WAC0172AS006 or	WAC0172AS006
⚠	AC CORD LA-2366 or	WAC0172LW006
⚠	AC CORD A0A0280-007	WAC0172LTE04
X1301	X'TAL 3.579545 MHz or	FXD355LLN003
	X'TAL 3.579545MHz(30PPM)	FXD355LCHE01

CRT CBA

Ref. No.	Description	Part No.
	CRT CBA Consists of the following	--------
	CAPACITORS	
C501	CERAMIC CAP. B K 1000pF/2KV or	CCD3DKP0B102
	CERAMIC CAP. B K 1000pF/2KV or	CA3D102MR030
	CERAMIC CAP. B K 1000pF/2KV	CCD3DKD0B102
C502	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASTL1R0
C511	CHIP CERAMIC CAP. B K 390pF/50V	CHD1JKB0B391
C521	CHIP CERAMIC CAP. B K 390pF/50V	CHD1JKB0B391
C531	CHIP CERAMIC CAP. B K 470pF/50V	CHD1JKB0B471
	CONNECTORS	
CN505	PIN CONNECTOR 005P-5100 or	JTEA001TG001
	CONNECTOR PIN, 1P LV or	1700576
	CONNECTOR PIN, 1P RT-01N-2.3A	1730688
	COIL	
L501	PCB JUMPER D0.6-P5.0	JW5.0T
	TRANSISTORS	
Q511	TRANSISTOR 2SC2482 TPE6	QQSZ02SC2482
Q521	TRANSISTOR 2SC2482 TPE6	QQSZ02SC2482
Q531	TRANSISTOR 2SC2482 TPE6	QQSZ02SC2482
	RESISTORS	
R510	METAL OXIDE FILM RES. 1W J 15k Ω or	RN01153ZU001
	METAL OXIDE FILM RES. 1W J 15k Ω	RN01153DP003

Ref. No.	Description	Part No.
R511	CHIP RES.(1608) 1/10W J 10 Ω	RRXAJB5Z0100
R512	CARBON RES. 1/4W J 5.6k Ω	RCX4JATZ0562
R515	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R516	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R517	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R520	METAL OXIDE FILM RES. 1W J 15k Ω or	RN01153ZU001
	METAL OXIDE FILM RES. 1W J 15k Ω	RN01153DP003
R521	CHIP RES.(1608) 1/10W J 10 Ω	RRXAJB5Z0100
R522	CARBON RES. 1/4W J 5.6k Ω	RCX4JATZ0562
R525	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R526	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R527	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R530	METAL OXIDE FILM RES. 1W J 15k Ω or	RN01153ZU001
	METAL OXIDE FILM RES. 1W J 15k Ω	RN01153DP003
R531	CHIP RES.(1608) 1/10W J 10 Ω	RRXAJB5Z0100
R532	CARBON RES. 1/4W J 5.6k Ω	RCX4JATZ0562
R535	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R536	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R537	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
MISCELLANEOUS		
CL501A	LEAD WIRE 8P 270MM	WX1T8001-001
JK501 ⚠	CRT SOCKET ISMS02S	JSCC220PK003

6513DE/EWC13D4/MSD513E
T8001UB/T8002UC/T8008UJ
2004-04-05